DENSO

2D Code Handy Terminal

BHT-700QWB-CE
BHT-700QWBG-CE

User's Manual

Preface

Thank you for using the BHT-700QWB-CE/700QWBG-CE DENSO WAVE 2D Code Handy Terminal.

Please read this manual thoroughly prior to operation to ensure full use of the product's functionality, and store safely in a convenient location for quick reference even after reading.

If the BHT is left with the battery cartridge discharged or with no battery cartridge loaded, or if the battery cartridge is replaced incorrectly, data stored in the BHT may be lost. By performing a full reset (refer to "Chapter 2 BHT Preparation" – "2.6 Resetting and Full Resetting"), all data stored in the RAM will be lost. It is therefore recommended that important data be either saved to the "FLASH" folder or backed up at the computer.

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The latest precision manufacturing technology yields LCD panels with an effective resolution of 99.99% or higher. The downside, however, is that up to 0.01% of the pixels can remain permanently dark or lit on today's state-of-the-art panels.

A thin Newton's ring (rainbow-like patterns) may appear on the touch panel.
This does not necessarily indicate a problem with the touch panel.

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Customer Registration and Inquiries

Customer Registration

To allow us to provide our customers with comprehensive service and support, we request that all customers complete a Member Registration Form. Registered members will be offered the following privileges.

- The latest upgrade information
- Free exhibition and event information for new products
- Free Web-information service "QBdirect".

QBdirect Service Contents

Information search service (FAQ)	Offers detailed information on each product.
Download service	Offers downloads of repair modules for the latest BHT Series systems or software, and sample programs.
E-mail inquiries	Product related queries can be sent in by e-mail.

* Please note that these privileges may be subject to change without prior notice.

− How to Register

Access the URL below and follow the instructions provided.

http://www.qbdirect.net

Inquiries

− Technical Inquiries (QBdirect)

- BHT product programming method
- Product setup method, usage
- Other technical questions

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http://www.qbdirect.net

About this Manual

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- The reproduction or duplication of the whole or part of this manual is strictly prohibited without prior consent.
- Every attempt has been made to ensure that the content of this manual is thorough and up to date, however, we kindly ask that any questionable content, mistakes, or omissions be reported to DENSO WAVE.
- The copyright for this User's Manual belongs to DENSO WAVE INCORPORATED.
- Lettering in the screens in this User's Manual is a little different from that in the actual screens. File names used are only for description purposes, and will therefore not display if files have not been set with the same names.

Manual Composition

This manual is made up of the following 9 chapters.

Chapter 1 Outline

Describes the BHT system and provides an overall outline of the BHT.

Chapter 2 BHT Preparation

Describes information required by the user and procedures that must be performed prior to commencing operation.

Chapter 3 Basic Operation

Describes how to scan 2D codes and barcodes using the BHT, the backlight function, how to use the keypad, and BHT data transmission.

Chapter 4 System Operation

Describes how to operate the desktop, Start menu and System Menu, and how to make wireless network settings.

Chapter 5 Communication

Describes technical information on BHT connector communication, infrared communication, and wireless communication, and provides details of Microsoft ActiveSync.

Chapter 6 Maintenance

Describes battery cartridge and memory back-up power source replacement, and daily procedures for taking care of the BHT and CU/CH.

Chapter 7 Error Messages

Describes causes and countermeasures for error messages that display during BHT use.

Chapter 8 Specifications

Describes specifications for hardware, readable 2D codes/barcodes, and interfaces.

Chapter 9 Appendices

Describes the CU-700 Series (option) and provides details of the MicroSD card (option) insertion procedure.

Viewing this Manual

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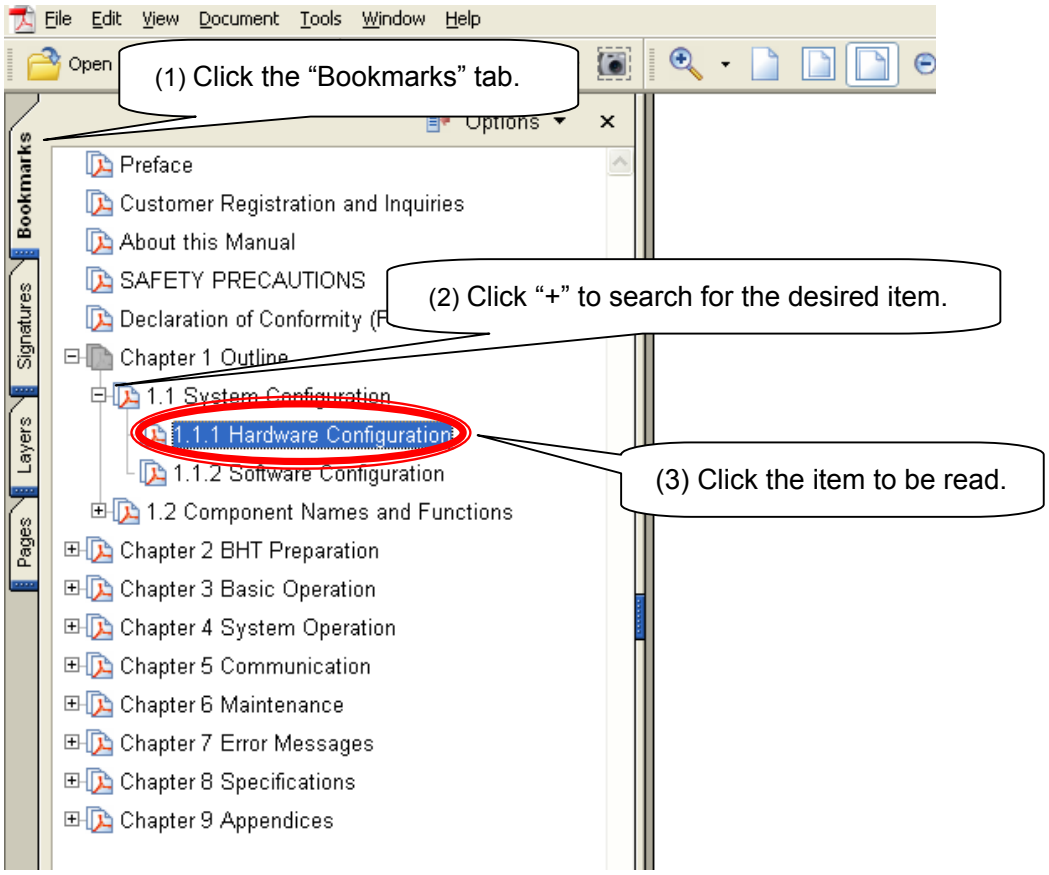

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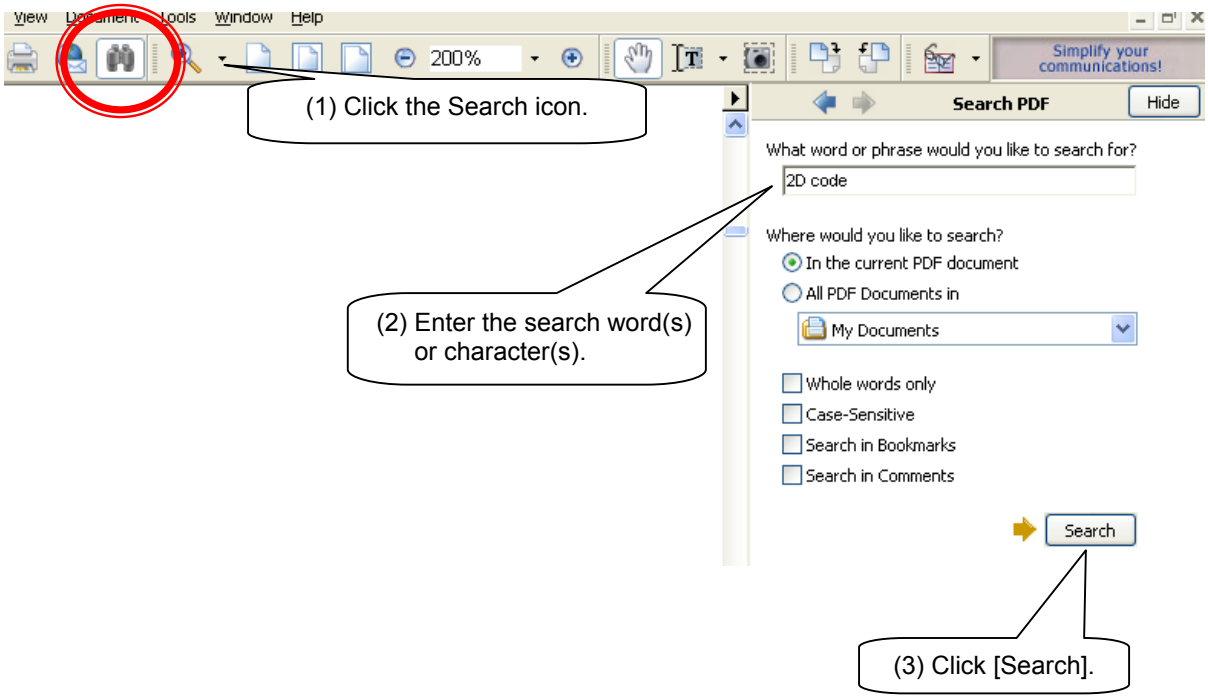

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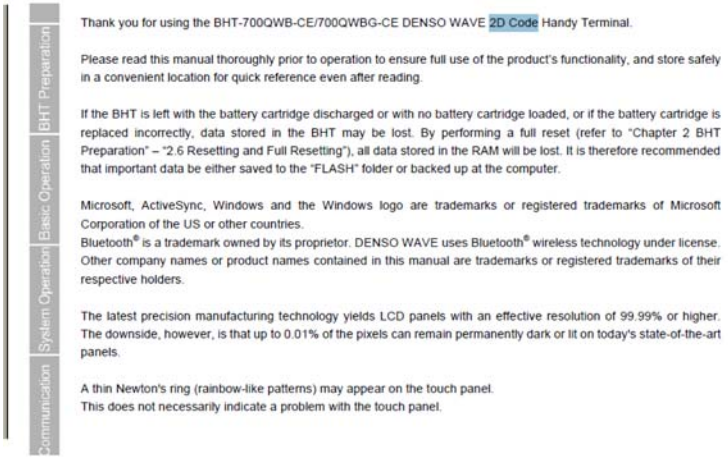
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Related Documentation

- BHT-700-CE API Reference Manual
- BHT-700-CE Class Library Reference Manual
- 2D Code Scanner/Barcode Scanner Keyboard Interface with BHT-CE kbifCE User's Guide

SAFETY PRECAUTIONS

Be sure to observe all these safety precautions.

■ Please READ through this manual carefully. It will enable you to use the BHT and CU correctly.

■ Always keep this manual nearby for speedy reference.

Strict observance of these warnings and cautions is a MUST for preventing accidents that could result in bodily injury and substantial property damage. Make sure you fully understand all definitions of these terms and symbols given below before you proceed to the text itself.

⚠ **WARNING**	Alerts you to those conditions that could cause serious bodily injury or death if the instructions are not followed correctly.
⚠ **CAUTION**	Alerts you to those conditions that could cause minor bodily injury or substantial property damage if the instructions are not followed correctly.

Meaning of Symbols

	A triangle (△) with a picture inside alerts you to a warning of danger. Here you see the warning for electrical shock.
	A diagonal line through a circle (⃠) warns you of something you should not do; it may or may not have a picture inside. Here you see a screwdriver inside the circle, meaning that you should not disassemble.
	A black circle (●) with a picture inside alerts you to something you MUST do. This example shows that you MUST unplug the power cord.

⚠ WARNING

Handling the battery cartridge

- Never disassemble or heat the battery cartridge, nor put it into fire or water; doing so could cause battery-rupture or leakage of battery fluid, resulting in a fire or bodily injury.
- Do not carry or store the battery cartridge together with metallic ball-point pens, necklaces, coins, hairpins, etc.
  Doing so could short-circuit the terminal pins, causing the batteries to rupture or the battery fluid to leak, resulting in a fire or bodily injury.
- Avoid dropping the battery cartridge or letting it undergo any shock or impact.
  Doing so could cause the batteries to break, generate heat, rupture or burn.
- Never charge the rechargeable battery cartridge where any inflammable gases may be emitted; doing so could cause fire.

- Only use the dedicated charger for charging the rechargeable battery cartridge.
  Using a different type of charger could cause battery-rupture or leakage of battery fluid and result in a fire, bodily injury, or serious damage to property.

Handling the BHT

- The BHT uses a laser light for indicating the scanning range. The intensity of the laser light might be too low to inflict bodily injury. However, do not look into the laser beam or view directly with optical instruments.
  The BHT complies with IEC 60825-1:1993+A2:2001.
  In accordance with Clause 8 and 9, IEC 60825-1, the following information is provided to the user:

LASER RADIATION
DO NOT STARE INTO BEAM OR VIEW
DIRECTLY WITH OPTICAL INSTRUMENTS
CLASS 2 LASER PRODUCT

For European Union

LASERLICHT - NICHT IN DEN
STRAHL BLICKEN. LASER KLASSE
2 LUMIÈRE LASER - NE PAS
REGARDER DANS LE FAISCEAU
APPAREIL À LASER DE CLASSE
2. CAUTION-LASER LIGHT. DO
NOT STARE INTO BEAM. IEC
CLASS 2 LASER PRODUCT
IEC60825-1 : 1993+A2 : 2001

Caution - Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous laser light exposure.

- Do not look into the light source through the reading window or point the light source towards the eyes.
  The light emitted through the reading window is harmful to the eyes.
- Do not poke at the eyes with the stylus that comes with the BHT.

⚠ WARNING

Handling the CU

	• If smoke, abnormal odors or noises come from the CU, immediately unplug the AC adapter from the wall socket or CU and contact your nearest dealer. Failure to do so could cause fire or electrical shock. • If foreign material or water gets into the CU, immediately unplug the AC adapter from the wall socket or CU and contact your nearest dealer. Failure to do so could cause fire or electrical shock. • If you drop the CU so as to damage its housing, immediately unplug the AC adapter from the wall socket or CU and contact your nearest dealer. Failure to do so could cause fire or electrical shock.
	• Never use the CU for charging anything other than the specified battery cartridges. Doing so could cause heat, battery-rupture, or fire. • Never bring any metals into contact with the output terminals. Doing so could produce a large current through the CU, resulting in heat or fire, as well as damage to the CU. • Never use the CU on the line voltage other than the specified level. Doing so could cause the CU to break or burn.
	• Use the dedicated AC adapter only. Failure to do so could result in fire. • If the power cord of the AC adapter is damaged (e.g., exposed or broken lead wires), stop using it and contact your nearest dealer. Failure to do so could result in a fire or electrical shock.

⚠ CAUTION

Handling the battery cartridge

⚠	• Charge batteries in temperature from 0°C to 40°C (32°F to 104°F).
⊘	• Never charge a wet or damp rechargeable battery cartridge. Doing so could cause the batteries to break, generate heat, rupture or burn.

Handling the BHT

⚠	• If smoke, abnormal odors or noises come from the BHT, immediately turn off the power, pull out the battery cartridge, and contact your nearest dealer. Failure to do so could cause smoke or fire. • If foreign material or water gets into the BHT, immediately turn off the power, pull out the battery cartridge, and contact your nearest dealer. Failure to do so could cause smoke or fire. • If you drop the BHT so as to damage its housing, immediately turn off the power, pull out the battery cartridge, and contact your nearest dealer. Failure to do so could cause smoke or fire. • Do not use batteries or power sources other than the specified ones; doing so could generate heat or cause malfunction. • When using the hand belt, exercise due care to avoid getting them caught in other objects or entangled in rotating machinery. Failure to do so could result in accident or injury.
 Never dis-assemble	• Never disassemble or modify the BHT; doing so could result in an accident such as break or fire.
⊘	• Never put the BHT in places where there are excessively high temperatures, such as inside closed-up automobiles, or in places exposed to direct sunlight. Doing so could affect the housing or parts, resulting in a fire. • Avoid using the BHT in extremely humid or dusty areas, or where there are drastic temperature changes. Moisture or dust will get into the BHT, resulting in malfunction, fire or electrical shock. • In environments where static electricity can build into significant charges (e.g., if you wipe off the plastic plate with a dry cloth), do not operate the BHT. Doing so will result in malfunction or machine failure. • Do not apply excessive force when inserting or removing the rechargeable battery cartridge. Doing so will result in damage. • Tap the LCD only with the stylus that comes with the BHT. Using the tip of a pen or any pointed object will result in a damaged or broken LCD. • Put your palm of the hand through the handbelt. If you put your arm through the handbelt, it can be broken.

⚠ CAUTION

Handling the CU

	• Never disassemble or modify the CU; doing so could result in an accident such as fire or malfunction.
	• Never put the CU in places where there are excessively high temperatures, such as inside closed-up automobiles, or in places exposed to direct sunlight. Doing so could affect the housing or parts, resulting in a fire. • Avoid using the CU in extremely humid or dusty areas, or where there are drastic temperature changes. Moisture or dust will get into the CU, resulting in malfunction, fire or electrical shock. • Never cover or wrap up the CU or AC adapter in a cloth or blanket. Doing so could cause the unit to heat up inside, deforming its housing, resulting in a fire. Always use the CU and AC adapter in a well-ventilated area. • Do not place the CU anyplace where it may be subjected to oily smoke or steam, e.g., near a cooking range or humidifier. Doing so could result in a fire or electrical shock. • Keep the power cord away from any heating equipment. Failure to do so could melt the sheathing, resulting in a fire or electrical shock. • Do not insert or drop foreign materials such as metals or anything inflammable through the openings or vents into the CU. Doing so could result in a fire or electrical shock.
	• If you are not using the CU for a long time, be sure to unplug the AC adapter from the wall socket for safety. Failure to do so could result in a fire. • When caring for the CU, unplug the AC adapter from the wall socket for safety. Failure to do so could result in an electrical shock.

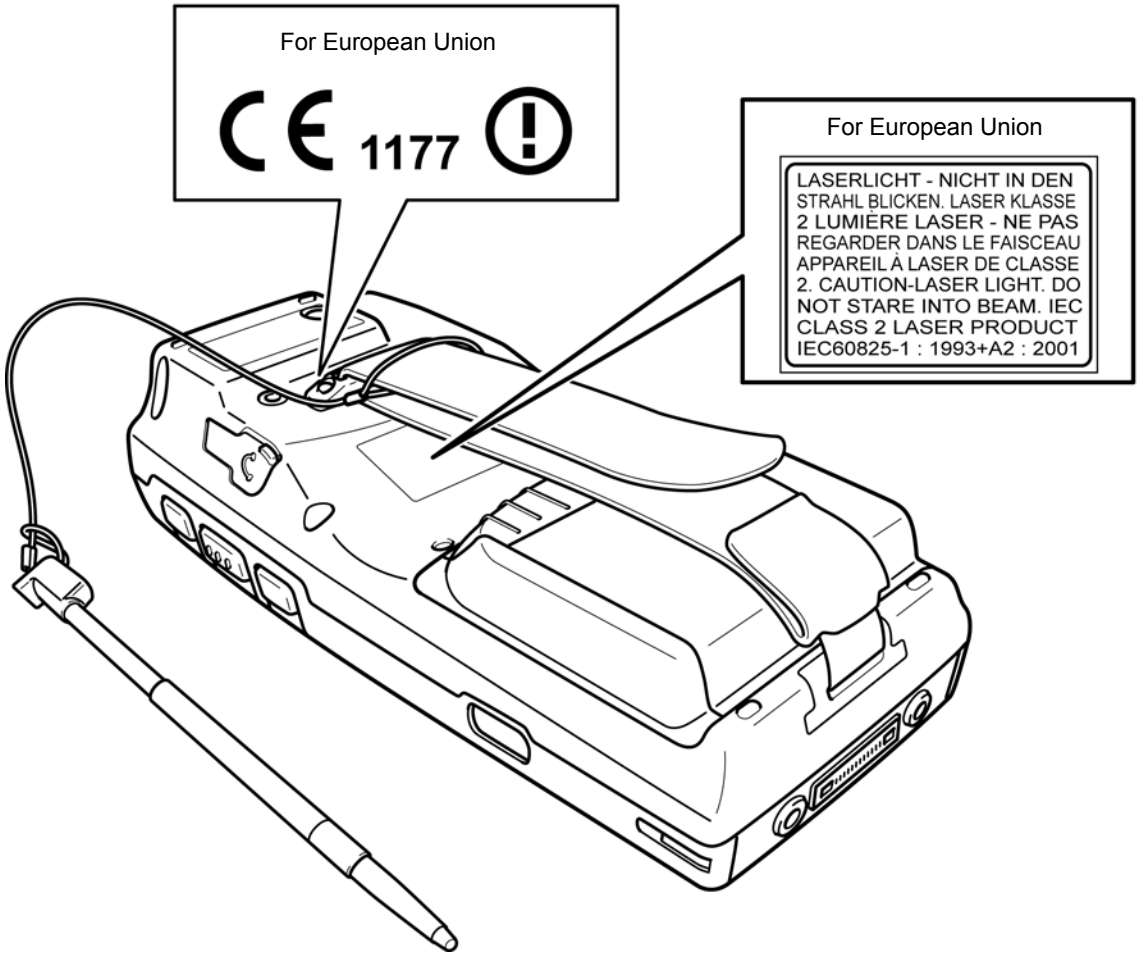
Declaration of Conformity (For European Union)

Hereby, DENSO WAVE INCORPORATED, declares that this BHT-700QWB-CE/700QWBG-CE is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

CE marking:

CE 1177 !

LABELING:


For European Union
CE 1177 !
For European Union
LASERLICHT - NICHT IN DEN STRAHL BLICKEN. LASER KLASSE 2 LUMIÈRE LASER - NE PAS REGARDER DANS LE FAISCEAU APPAREIL À LASER DE CLASSE 2. CAUTION-LASER LIGHT. DO NOT STARE INTO BEAM. IEC CLASS 2 LASER PRODUCT IEC60825-1 : 1993+A2 : 2001

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Chapter 1
Outline

This chapter describes the BHT system and provides an overall outline of the BHT.

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1.1 System Configuration

This section describes the hardware required for the 2D code/barcode data collection system used by the BHT and the BHT software.

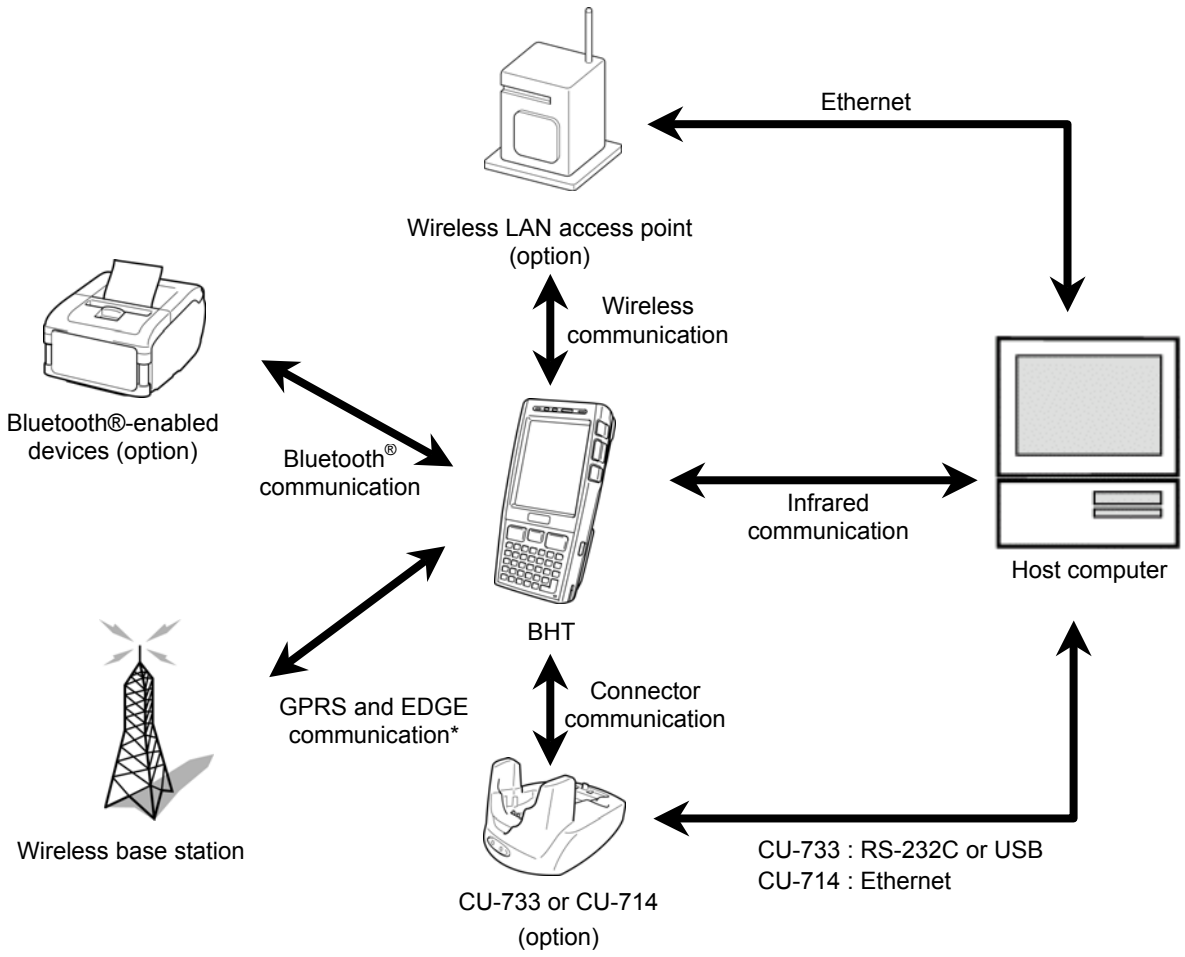
1.1.1 Hardware Configuration

In addition to the BHT, the following hardware is required for the 2D code/barcode data collection system used by the BHT.

Please note that certain components of the required hardware will differ depending on the type of communication used.

Refer to "Chapter 3 Basic Preparation" – "3.4 Transmitting Data" for detail.

*BHT-700QWBG-CE only



1.1.2 Software Configuration

[1] BHT Operating System (OS)

Microsoft Windows CE 5.0

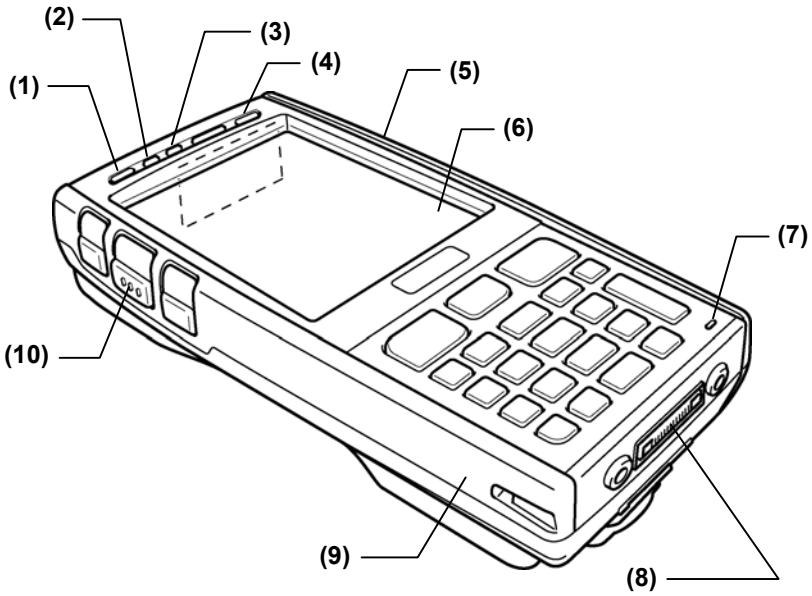
[2] Application Program Development Environment

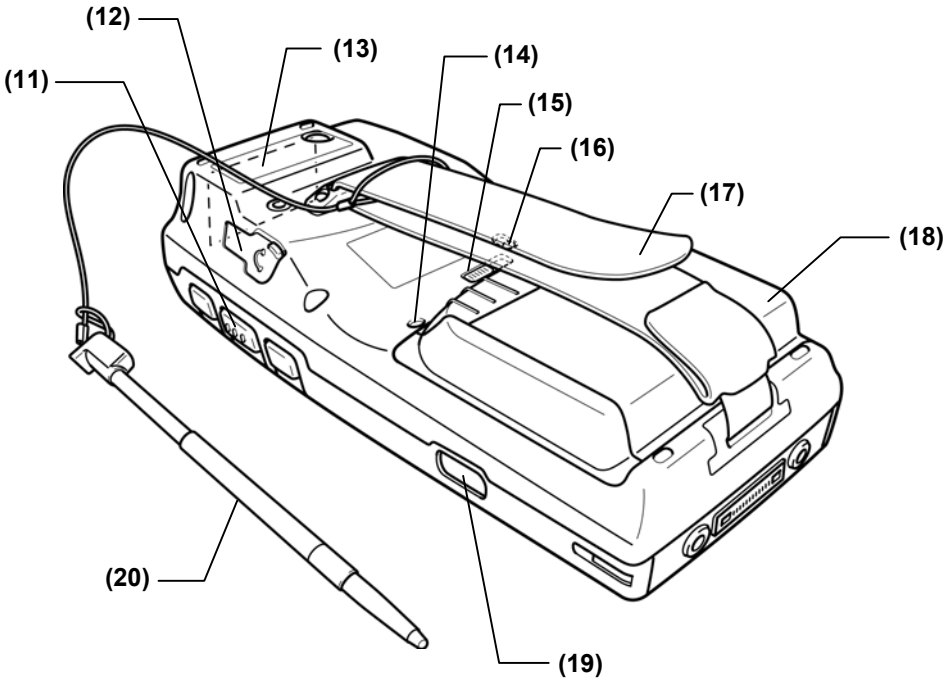
Refer to "BHT-700-CE API Reference Manual".

1.2 Component Names and Functions

1.2.1 BHT Front/Rear

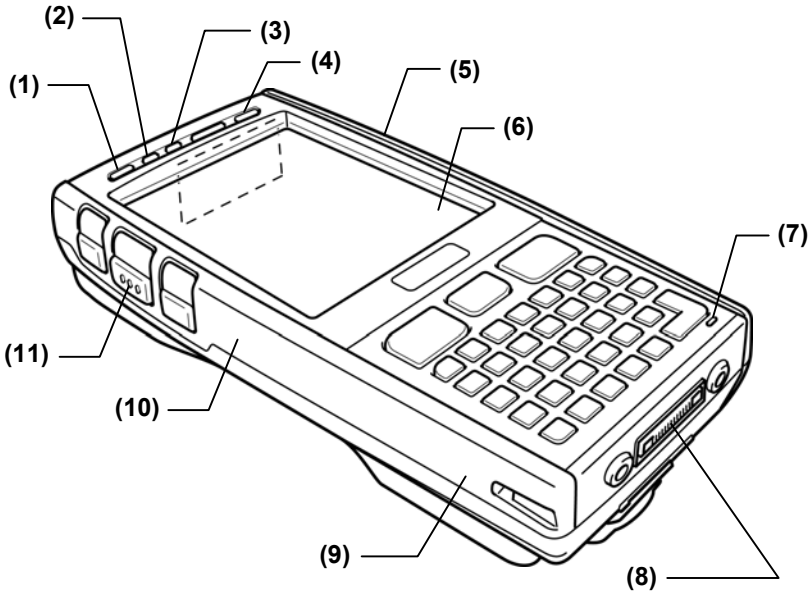
27-Keypad

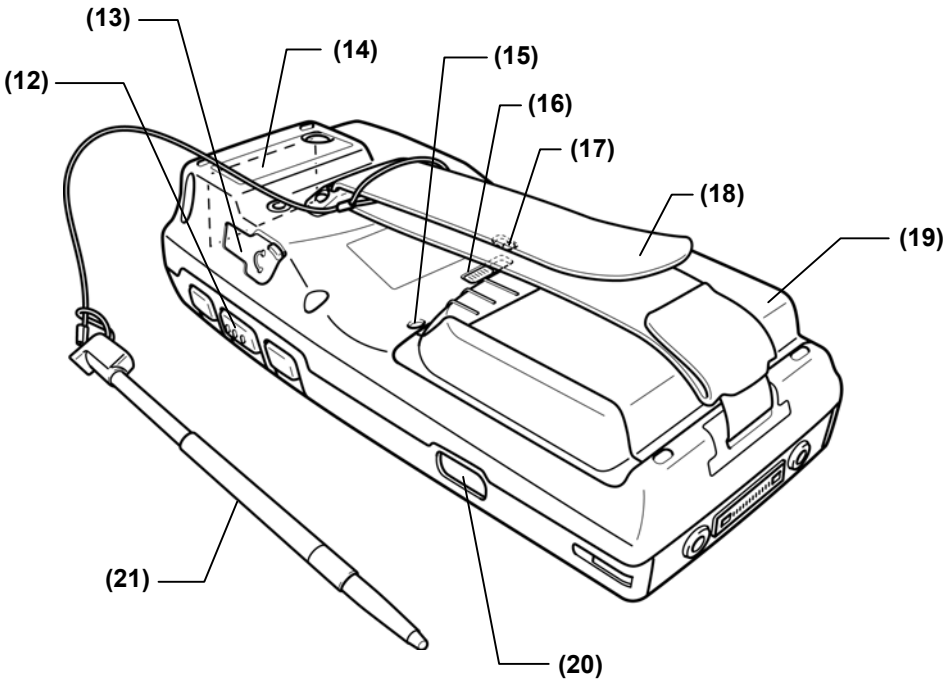




No.	Name	Function and Description
(1)	Beeper	
(2)	Charge LED	Illuminates in red during charging and turns green upon completion of charging.
(3)	Indicator LED	Indicates the 2D code/barcode read status. Illuminates in blue when the BHT has successfully read a 2D code/barcode.
(4)	Receiver	
(5)	IEEE802.11a/b/g built-in antenna	Used to communicate with the wireless LAN access point. Do not cover this antenna section with metal-evaporated tape or by hand. Doing so may result in communication failures.
(6)	Touch screen display (LCD)	Displays the characters and graphic patterns. Data may be entered by tapping the screen directly with the stylus.
(7)	Microphone	
(8)	Interface port	USB and RS-232C interface port
(9)	Bluetooth® built-in antenna	Used to communicate with other Bluetooth®-enabled devices. Do not cover this antenna section with metal-evaporated tape or by hand. Doing so may result in communication failures.
(10) (11)	Trigger switch	Press when scanning a 2D code/barcode. (This key performs the same function as the Scan key.)
(12)	Headset jack plug	Connect the optional headset jack.
(13)	Reading window	Align the reading window with 2D codes/barcodes to perform 2D code/barcode scanning.
(14)	Reset button	Refer to “Chapter 2 BHT Preparation” – “2.6 Resetting and Full Resetting”
(15) (16)	Battery lock switch	Lock after inserting the battery cartridge.
(17)	Hand belt	Always put your hand through this belt to prevent the BHT from being dropped accidentally.
(18)	Rechargeable battery cartridge	Main BHT power source * The battery cartridge shown in the drawing is the BT-700LL.
(19)	IrDA interface port	Used to exchange data/programs with the host computer or another BHT.
(20)	Stylus	Used to operate the touch screen.

42-Keypad





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(7)	Microphone	
(8)	Interface port	USB and RS-232C interface port
(9)	Bluetooth® built-in antenna	Used to communicate with other Bluetooth®-enabled devices. Do not cover this antenna section with metal-evaporated tape or by hand. Doing so may result in communication failures.
(10)	GPRS built-in antenna	Used to communicate with a wireless base station. Do not cover this antenna section with metal-evaporated tape or by hand. Doing so may result in communication failures.
(11) (12)	Trigger switch	Press when scanning a 2D code/barcode. (This key performs the same function as the Scan key.)
(13)	Headset jack plug	Connect the optional headset jack.
(14)	Reading window	Align the reading window with 2D codes/barcodes to perform 2D code/barcode scanning.
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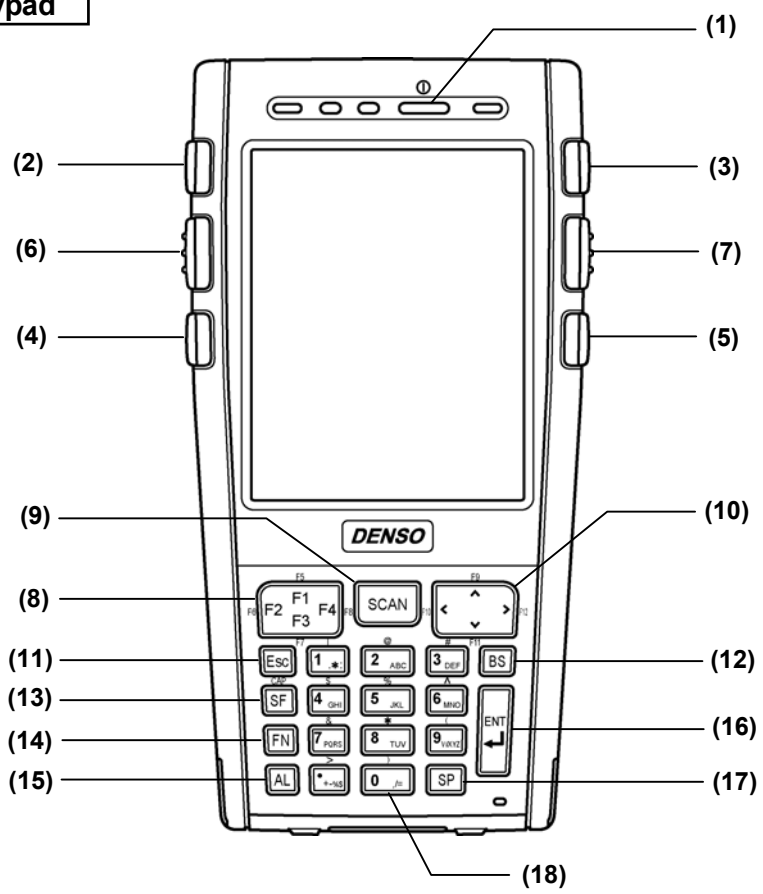
(20)	IrDA interface port	Used to exchange data/programs with the host computer or another BHT.
(21)	Stylus	Used to operate the touch screen.

1.2.2 Keypad

The BHT key functions can be set at user programs.
The diagram below shows an example of settings for each key function.

27-Keypad

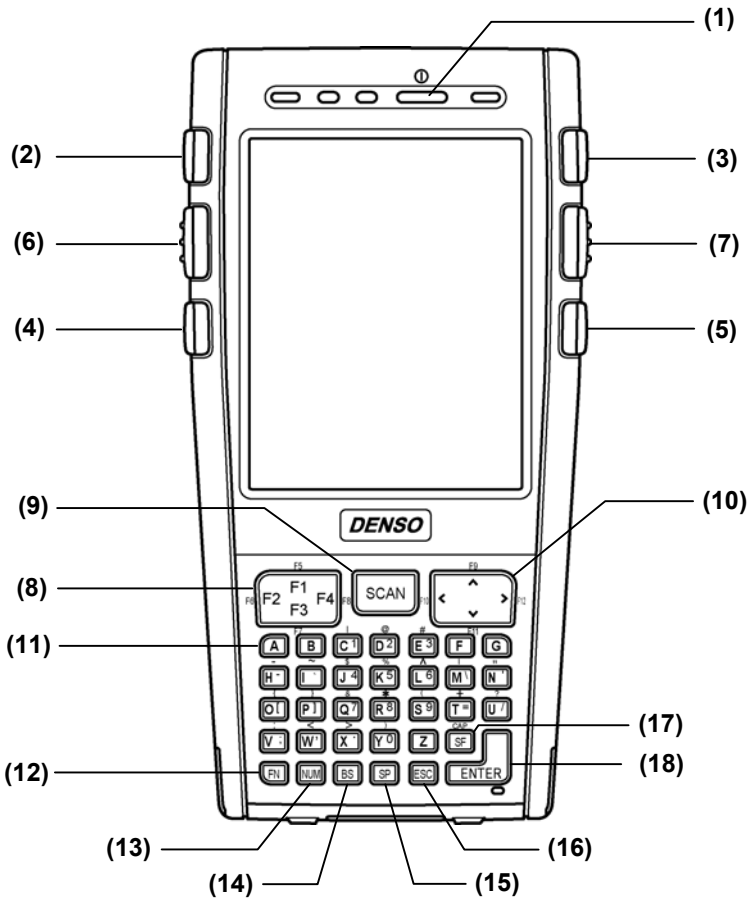


No.	Key	Name	Function and Description
(1)		Power key	Turns the BHT power ON and OFF.
(2)		Tab key	Used to enter a tab character.
(3) (4) (5)		M1, M2, M3 magic keys	• The SF and ENT key functions can be assigned to these magic keys by making settings at the SYSTEM MENU. • Character strings can be assigned at user programs. * Refer to “Chapter 4 System Operation” for details on how to operate the SYSTEM MENU.
(6) (7)		Trigger switches	Press to scan 2D codes/barcodes. (This key performs the same function as the Scan key.)

No.	Key	Name	Function and Description
(8)		Function keys	Used to select functions.
(9)		Scan key	Press to scan barcodes. (This key performs the same function as a Trigger switch.)
(10)		Cursor keys	Used to move the cursor and select menus.
(11)		Escape keys	Cancels the operation.
(12)		Backspace key	Moves back one character.
(13)		Shift key	Used in combination with other keys such as the numerical keys or power key for special input procedures.
(14)		Function mode key	Switches to Function mode.
(15)		Alphabetical mode key	Switches to alphabet entry mode.
(16)		Enter key	Press to finalize entered data or execute operations.
(17)		Space key	Enters a space.
(18)		Numerical keys	Used to enter data.

(6), (7) and (9) have an OR connection. The BHT will recognize that the [SCAN] key has been pressed by pressing any one of these keys.

42-Keypad



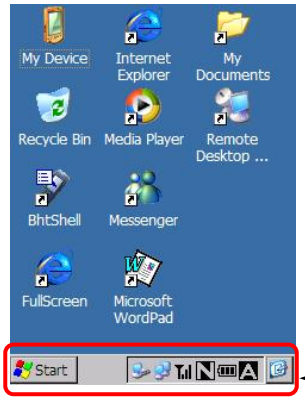
No.	Key	Name	Function and Description
(1)		Power key	Turns the BHT power ON and OFF.
(2)		Tab key	Used to enter a tab character.
(3) (4) (5)		M1, M2, M3 magic keys	• The SF and ENT key functions can be assigned to these magic keys by making settings at the SYSTEM MENU. • Character strings can be assigned at user programs. * Refer to “Chapter 4 System Operation” for details on how to operate the SYSTEM MENU.
(6) (7)		Trigger switches	Press to scan 2D codes/barcodes. (This key performs the same function as the Scan key.)

No.	Key	Name	Function and Description
(8)		Function keys	Used to select functions.
(9)		Scan key	Press to scan 2D code/barcodes. (This key performs the same function as a Trigger switch.)
(10)		Cursor keys	Used to move the cursor and select menus.
(11)		Alphabetical keys	Used to enter data.
(12)		Function mode key	Switches to Function mode.
(13)		Numerical mode key	Switches to numeric entry mode.
(14)		Backspace key	Moves back one character.
(15)		Space key	Enters a space.
(16)		Escape keys	Cancels the operation.
(17)		Shift key	Used in combination with other keys such as the numerical keys or power key for special input procedures.
(18)		Enter key	Press to finalize entered data or execute operations.

(6), (7) and (9) have an OR connection. The BHT will recognize that the [SCAN] key has been pressed by pressing any one of these keys.

1.2.3 BHT Screen

Depending on user settings and so on, the Windows desktop in the screens in this Operator's Guide may differ a little from that in the actual BHT screen.



Note: The taskbar may also be a little different from that in the actual screens.

	Indicates the current battery power level.
	Indicates the wired LAN with the CU-714 connection status. : The BHT is connected to a wired network. : The BHT is disconnected to a wired network.
	Indicates the wireless connection status. : The BHT is connected to a wireless network. : The BHT is not connected to a wireless network.
	Indicates the wireless device open status and radio field intensity. : Displays when the wireless device is open. : Indicates the radio field intensity by the number of bars. Strong → Weak
	Indicates the Bluetooth® power status. : Appears when the Bluetooth® device is powered on. (Blue) : Appears when the Bluetooth® device is powered off. (Grey) (This icon does not dislay by default, but can be displayed by changing the setting at the System Menu or user programs.)
	Displays when the key is pressed and the keys are in the shift status.
	Displays when the key is pressed and the keys are in the function status.
	Displays when the BHT is communicating with the computer via Microsoft ActiveSync.
	Displays when in numerical entry mode.(42-keypad only)
 	Displays when in alphabet entry mode. (27-keypad only) (The entry mode can be changed by pressing the ALP key.) Pressing a numerical key when in alphabet entry mode displays the letter assigned to that key in this ALP window.
	Tap this icon while an application is running to display the desktop. Tap again to return the original application execution screen.

	Indicates the software keyboard status. (Tap this icon to display/hide the software keyboard, or switch the keyboard status ON/OFF.) : Displays when ON. : Displays when OFF.
	Displays when the CPU switches to standby. (This icon does not dislay when standby status by default, but can be displayed by changing the setting at the System Menu or user programs.)
	Displays when Caps Lock is pressed at the software keyboard.

– Note – To minimize power consumption, the BHT automatically switches to standby mode after it has not been operated for a specified period*.

In standby mode, the touch screen is not refreshed, and as a result, icons in the taskbar may not be displayed or refreshed, and the calendar clock may not display the correct date or time.

* This time can be set by the user, with the default setting being one second. The time until the BHT switches to standby mode can be updated at the System Menu (Refer to “Chapter 4 System Operation”.) or by creating user programs. Refer to the "BHT-700-CE API Reference Manual" or "BHT-700-CE Class Library Reference Manual” for details of the user program creation method.

Chapter 2
BHT Preparation

Describes information required by the user and procedures that must be performed prior to commencing operation.

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2.1 "BHT Preparation" Procedure

Follow the steps below to prepare the BHT.

2.2 Loading and Charging the Battery Cartridge(Page 16)	First load and charge the battery cartridge.
⬇	
2.3 Attaching the Stylus (Page 23)	Attach the stylus to prevent it from being lost.
⬇	
2.4 Initial Setup (Page 25)	Calibrate the touch screen and set the calendar clock when the power is turned ON for the first time.

2.2 Loading and Charging the Battery Cartridge

The battery cartridge is not charged when purchased and should therefore be charged prior to use.
The chargers that can be use with the BHT are the communication units (CU-733, CU-714) and battery chargers (CH-751, CH-704).

* The CH-704 charger is used for charging individual batteries, and the CH-751 is a stand-type (same type as CU (communication unit)) charger.

The charge time is approximately 3 hours (standard rechargeable battery cartridge) or 6 hours (large-capacity rechargeable battery cartridge).

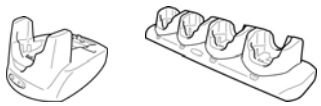
An only slightly discharged battery cartridge should take less time to become fully charged.

Charging Precautions

- Do not touch the BHT, battery, or charger terminals by hand or stain them. Doing so could result in a contact failure or prevent charging.
- Never charge the battery near fire or in a high-temperature environment.
  High-temperatures may activate the charger's protective device, preventing charging, and lead to protective device damage, overheating, blowout or combustion.
- Terminate charging if not completed even after the specified time has elapsed.

2.2.1 Loading and Charging the Battery Cartridge

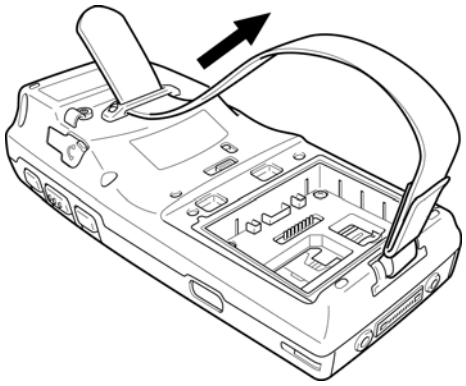
Charging with the communication unit (CU-733, CU-714)
or battery charger (CH-751)



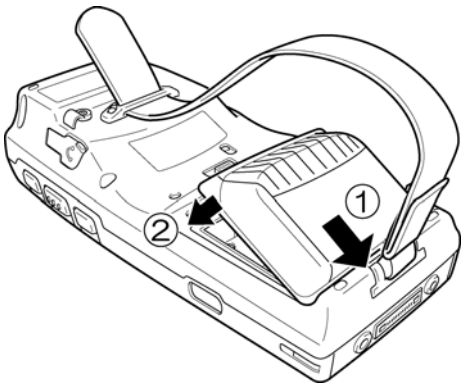
* The battery cartridge shown in the drawing is the BT-700LL.

⚠ CAUTION	• Charge batteries in temperature from 0°C to 40°C (32°F to 104°F).

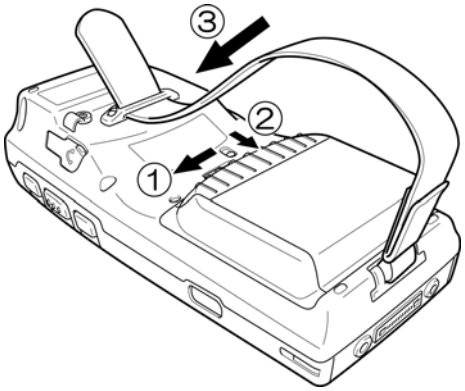
1. Disconnect the hand belt.



2. Insert the battery cartridge cover (1) tabs into the BHT and load the cartridge in the direction shown by the arrow (2).

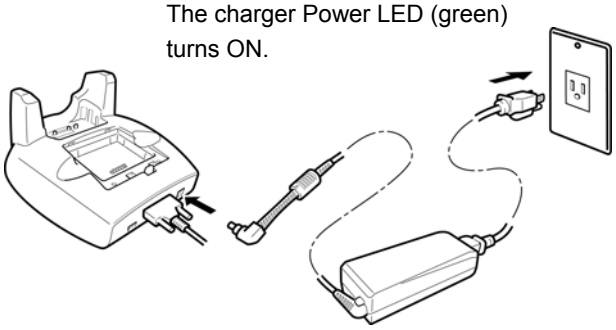


3. Slide the battery cartridge cover release buttons (1)/(2) in the direction shown by the arrows and return the hand belt (3) to its original position.



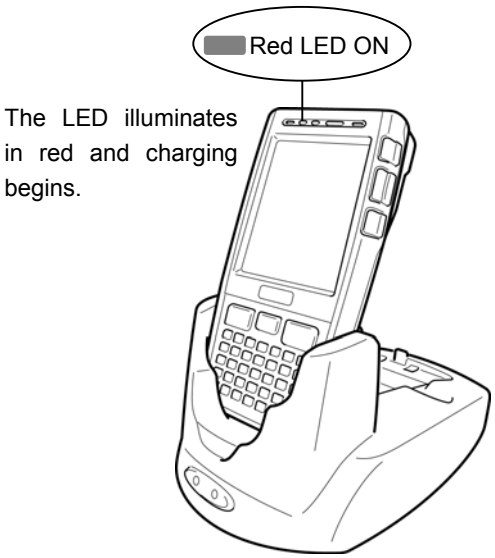
4. Connect the dedicated AC adapter to the DC input connector on the charger and plug the adapter into the wall socket.

The charger Power LED (green) turns ON.



5. Place the BHT on the charger.

– Point – After placing the BHT on the charger when using the BHT for the first time or when left unused for long periods of time, do not remove from the charger for approximately 3 hours (standard rechargeable battery cartridge) or 6 hours (large-capacity rechargeable battery cartridge).



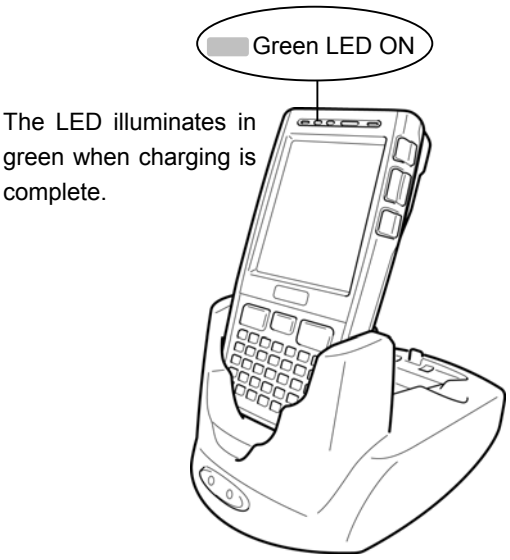
The LED illuminates in red and charging begins.

– Note – The BHT is equipped with a back-up battery used to back-up the internal memory and calender clock. The internal back-up battery is charged first when charging is commenced.

Do not remove the BHT from the charger for at least 2 days when using the BHT for the first time or when using after long periods of time.

6. The BHT indicator LED will change to green when charging is complete.

– Point –
- Charging takes approximately 3 hours (standard rechargeable battery cartridge) or 6 hours (large-capacity rechargeable battery cartridge).
- An only slightly discharged battery cartridge should take this time to become fully charged.



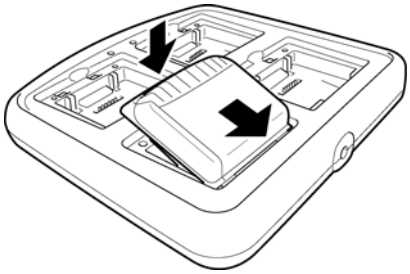
The LED illuminates in green when charging is complete.

Charging with the battery charger (CH-704)

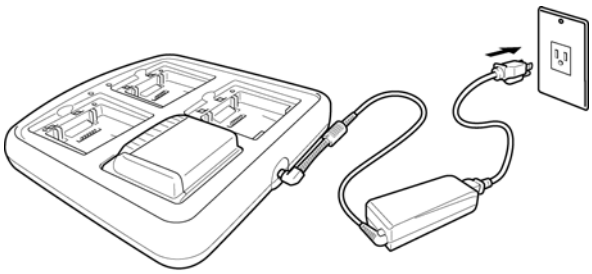
* The battery cartridge shown in the drawing is the BT-700LL.

⚠ CAUTION	• Charge batteries in temperature from 0°C to 40°C (32°F to 104°F).

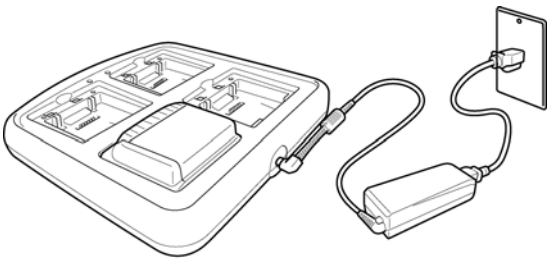
1. Check the battery cartridge terminals and insert the cartridge.



2. Connect the power cable to the CH-704 and connect the plug to a commercial AC power source (100 V AC).



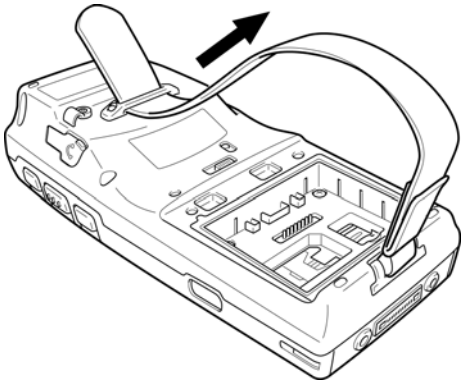
3. The red LED flashes slowly (1 second ON, 1 second OFF) when charging is complete.



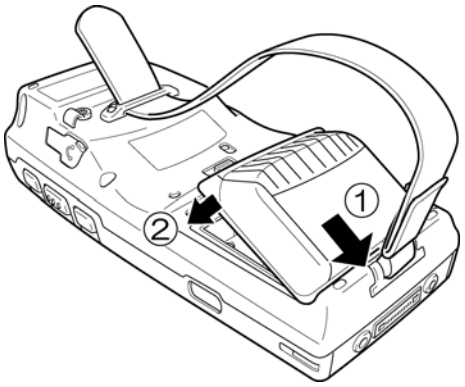
– Point –

- Charging takes approximately 3 hours (standard rechargeable battery cartridge) or 6 hours (large-capacity rechargeable battery cartridge).
- An only slightly discharged battery cartridge should take this time to become fully charged.

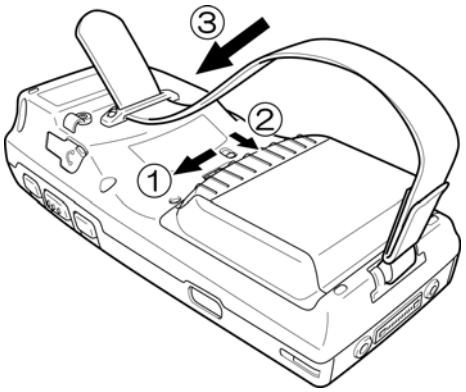
4. Disconnect the hand belt.



5. Insert the battery cartridge cover (1) tabs into the BHT and load the cartridge in the direction shown by the arrow (2).



6. Slide the battery cartridge cover release buttons (1)/(2) in the direction shown by the arrows and return the hand belt (3) to its original position.



– Note – The BHT is equipped with a back-up battery used to back-up the internal memory and calender clock. The internal back-up battery is charged first a charged battery cartridge is inserted.

Do not remove the BHT from the charger for at least 2 days when using the BHT for the first time or when using after long periods of time.

⚠ WARNING

Mishandling of the charger may result in charger overheating, smoke generation, blowout or combustion. Please read the following items prior to use.

- Never disassemble or modify the battery cartridge.
- Never connect the battery cartridge (+) and (-) terminals with a metal object such as a piece of wire.
- Never carry or store the battery cartridge together with metallic necklaces, hairpins and so on.
- Never expose the battery cartridge to fire or apply heat.
- Never use or leave the battery cartridge in the vicinity of high-temperature locations (60° C or higher) such as a fire or stove.
- Never place the battery cartridge into or soak it in water or seawater.
- Never charge the battery cartridge in the vicinity of fire or under a scorching sun.
- Never hammer nails into the battery cartridge, hit it with a hammer, or trample on it.
- Never apply strong impact to or throw the battery cartridge.
- Never use significantly damaged or deformed battery cartridges.
- Never apply solder directly to the battery cartridge.
- If battery fluid leaked from the battery cartridge gets into the eyes or comes into contact with the skin, wash thoroughly with clean water such as tap water without rubbing, and obtain medical treatment immediately. Failure to do so will result in eye or skin injuries.

⚠ CAUTION

Mishandling of the charger may result in charger overheating, smoke generation, blowout or combustion. Please read the following item prior to use.

- Terminate charging if not completed even after the specified time has elapsed.

– Note –

- The BHT is equipped with a back-up battery used to back-up the internal memory and calendar clock when the battery cartridge is removed or the battery voltage falls below the stipulated level.
  It is therefore necessary to charge the internal back-up battery when using the BHT for the first time or when left unused for long periods of time.
  The back-up battery is charged automatically when a fully-charged battery cartridge is loaded.
  To ensure that the back-up battery is fully charged, do not remove the battery cartridge for at least 2 days when using the BHT for the first time or when using after long periods of time.
- Refer to “Chapter 6 Maintenance” – “6.3 Using the BHT after Long Periods” for details of handling the BHT after long periods of time.
- Avoid storing the battery cartridge in high-temperature locations. The battery capacity may decrease.
- Do not touch the BHT, battery, or charger terminals by hand or stain them. Doing so may result in a BHT operation defect or battery cartridge charging failure. It is recommended that dirt on the battery cartridge terminals or BHT battery terminals be periodically wiped with a soft, dry cloth.

2.2.2 Battery Power Level Indicator

The battery power level can be checked at the icon that displays in the taskbar. The battery power displays in three levels.

The battery power level indicator is a guideline to notify the operator to charge the battery promptly when discharged.

: Sufficient battery power remains.

: The battery power is partially depleted.
Charge promptly.

: The battery power is almost fully depleted and should be charged immediately.

Note: There are times when the taskbar display differs from the display on the BHT LCD screen.

About the Battery Level

- The battery power level indicator does not accurately reflect the battery residual power and should only be used as a guideline.
- The battery power level will fluctuate due to BHT operation, and therefore disparities may occur between the actual battery voltage and the display indicator.
- Ensure to charge the battery as soon as possible before the battery power is depleted.

2.2.3 Battery Voltage Drop

If the battery cartridge voltage drops to a level that requires charging or battery cartridge replacement while using the BHT, the screen on the right displays only once for approximately 2 seconds and the beeper sounds three times when a key is pressed. The BHT then returns to its normal operational status.
The screen on the right indicates that the battery cartridge will soon need charged and should be promptly charged or replaced.

Battery voltage has lowered.

If use of the BHT is continued without charging or replacing the battery cartridge after the above message displays and the battery voltage drops to a level that prevents BHT operation, the screen on the right displays, the beeper sounds five times, and the power automatically turns OFF. Depending on the battery level, this message may not display or the beeper may not sound five times.
When this message displays, replace or charge the battery cartridge.

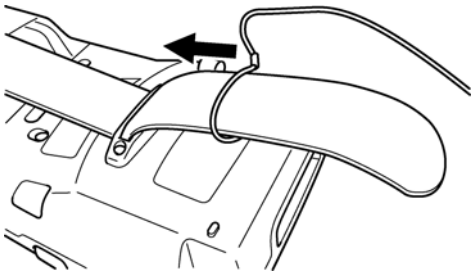
Charge the Battery!

2.3 Attaching the Stylus

Attach the stylus to prevent it from being lost.

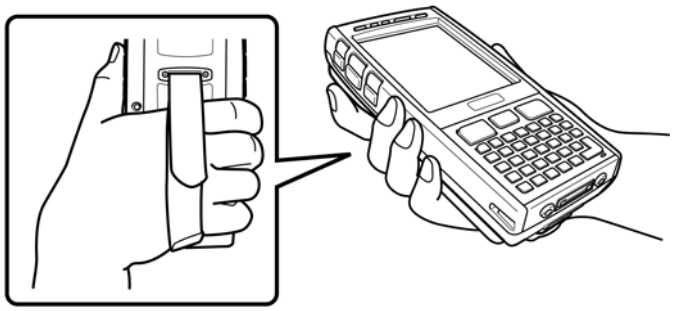
2.3.1 Attaching the Stylus

Attach the stylus as shown below.



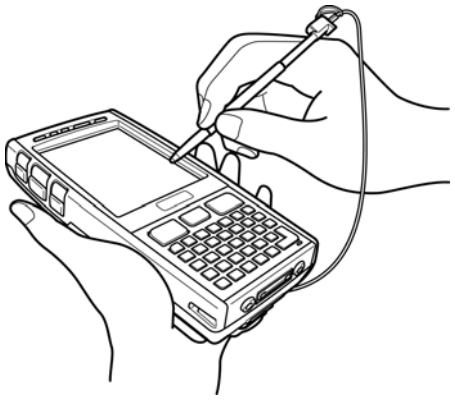
2.3.2 Holding the BHT

Insert your hand into the hand belt and hold the BHT as shown below.



2.3.3 Using the Stylus

The BHT liquid crystal display (LCD) is a touch screen. Buttons, menus and so displayed on the screen can be selected using the stylus provided.
Always perform touch screen calibration before operating the touch screen.
(Refer to “2.4 Initial Setup”.)



2.3.4 Touch Screen Operation

Select the LCD touch screen buttons and menus and so on using the stylus provided.

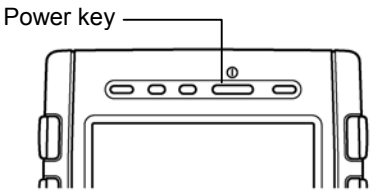
Action	Description
Tap	This involves tapping the touch screen once. This function is the equivalent of a “click” with a mouse on a computer.
Double-tap	This involves tapping the touch screen twice in quick succession. This function is the equivalent of a “double-click” with a mouse on a computer.
Drag	This involves moving the stylus to an object while pressing the touch screen. This function is the equivalent of “dragging” with the mouse on a computer.
Long-tap	This involves tapping the touch screen for several seconds. This function is the equivalent of a "right-click" with the mouse on a computer.

- Always use the stylus provided to operate the touch screen. Never use fingernails or any pointed or hard objects, or apply strong pressure or impact to the touch screen. This may result in damage or a malfunction.
- If dirty, clean the touch screen and stylus tip prior to operation. Failure to observe this may result in scratches to the LCD screen or hinder smooth movement of the stylus.

2.4 Initial Setup

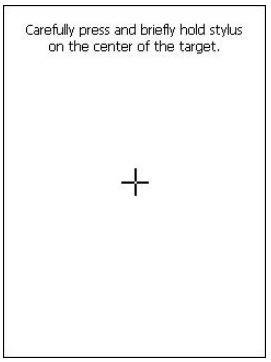
It is necessary to perform touch screen calibration and set the date and time when turning ON the BHT power for the first time. Press the **power** key to turn ON the BHT power. The calibration screen should then display. If the calibration screen does not display, first perform a “full reset”. Refer to “2.6 Resetting and Full Resetting” for details of the full reset method.

1. Press the **power** key to turn ON the BHT power.



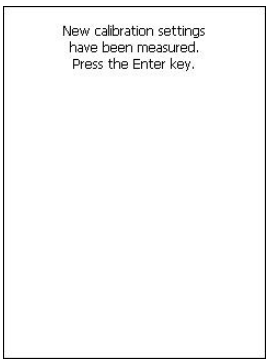
2. The screen on the right displays.

Tap the center of the “+” with the stylus for approximately 1 second.
Tap the center of the “+” each time it moves.
(The “+” mark moves from the center of the screen to the upper left, lower left, lower right and upper right, making a total of 5 positions.)



3. Press the **ENT** key.

Press the **ENT** key or tap the screen to complete touch screen calibration and display the data and time setting screen.



4. Set the date, time and time zone and then tap the **OK** button.

Date/Time
OK
September 2005
S M T W T F S
28 29 30 31 1 2 3
4 5 6 7 8 9 10
11 12 13 14 15 16 17
18 19 20 21 22 23 24
25 26 27 28 29 30 1
2 3 4 5 6 7 8
12:25:16 AM
Time Zone
(GMT-08:00) Pacific Time (US &
Automatically adjust clock for daylight saving

2.5 Turning OFF the Power

Use one of the following three methods to turn OFF the BHT power.

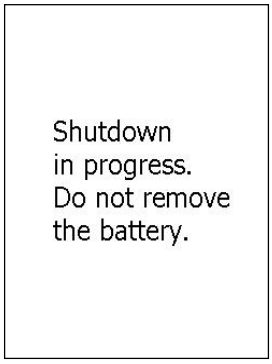
Normal power OFF	→ Press the **power** key.
Turning the power OFF after registry back-up	→ Hold down the SF key and press the **power** key for 3 seconds or more.
Auto power OFF	→ The power turns OFF automatically when the BHT is not used for a set length of time.

2.5.1 Normal Power OFF

1. Press the **power** key.

   The BHT power turns OFF after the screen on the right displays.

   – **Point** – Do not remove the battery cartridge while the message on the right is displayed.
   Failure to observe this may result in data stored in the BHT being lost.



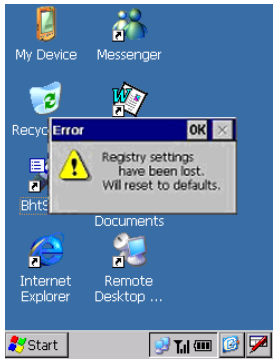
2.5.2 Turning the Power OFF after Registry Back-up

1. Hold down the **SF** key and press the **power** key.

   The message on the right displays and registry back-up is commenced.
   The power turns OFF automatically when the back-up is complete.

   – **Point** – Do not remove the battery cartridge while the message on the right is displayed.
   Failure to observe this may result in data stored in the BHT being lost.

The Registry is an area in which settings information required for BHT operation is recorded.
If the Registry is lost, it is automatically restored by the OS.
The error message on the right displays if the OS fails to restore the Registry (because the Registry has not been backed up).
Refer to “Chapter 4 System Operation” for details of how to return the Registry to its default status.



2.5.3 Auto Power OFF

The power turns OFF automatically when the BHT is not used for the length of time set at the user program.
The default time is set to 3 minutes when the BHT is shipped from the factory.

– Point – Do not remove the battery cartridge while Auto Power OFF is processing.
Failure to observe this may result in data stored in the BHT being lost.

* Refer to “Chapter 4 System Operation” for details of auto power OFF.

2.6 Resetting and Full Resetting

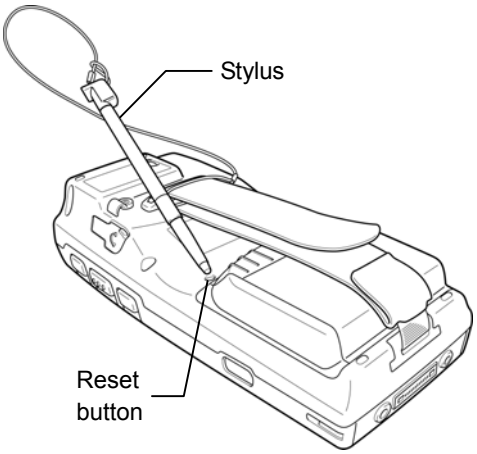
2.6.1 Reset

Reset the BHT in the following cases.

- The BHT makes no response to entry from the touch screen or keys.
- Programs in the BHT malfunction for some unknown reason.

2.6.2 Reset Method

1. With the BHT power ON, press the reset button on the rear of the BHT with the stylus provided.



– **Point** – Data stored as a file will not be lost even after resetting. However, any data currently being edited will be lost.

2.6.3 Full Reset

Perform a full reset if the problem persists even after resetting.

2.6.4 Full Reset Method

1. With the BHT power OFF, hold down the reset button on the rear of the BHT with the stylus and press the **power** key. Then release the reset button and **power** key and press the **power** key again to fully reset the BHT.

– **Point** – All data stored in the RAM will be lost when performing a full reset. It is recommended that any important data be backed up to the “FLASH” folder or to the computer.

2.6.5 Memory Contents after Reset/Full Reset

	Reset	Full Reset
Data in the “FLASH” folder	Data retained	Data retained
Data in other folders	Data retained	Data erased
Contents of the Registry	Data retained	Data erased (Note)
Data being edited	Data erased	Data erased

(Note) If the Registry has been backed up (Refer to “2.5 Turning OFF the Power”.), the backed up Registry will be used.

2.6.6 Applications Started Up when Performing a Reset/Full Reset

Any executable files (XXXXXX.exe) in the “FLASH\StartUp” folder will be automatically started up when rebooting the BHT following a reset/full reset.

Chapter 3
Basic Operation

This chapter describes how to scan 2D codes and barcodes using the BHT, the backlight function, how to use the keypad, and BHT data transmission.

3.1 Scanning 2D Codes or Barcodes ····32
3.2 Turning ON/OFF the Backlight ····34
3.3 Using the Keypad ····36
3.3.1 Entering Numerical Data ····36
3.3.2 Entering Alphabet Data ····36
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3.4.1 Connector Communication ····39
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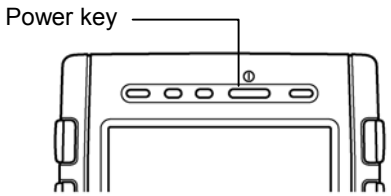
3.4.4 Wireless Communication ····42
3.4.5 GPRS and EDGE Communication ····43

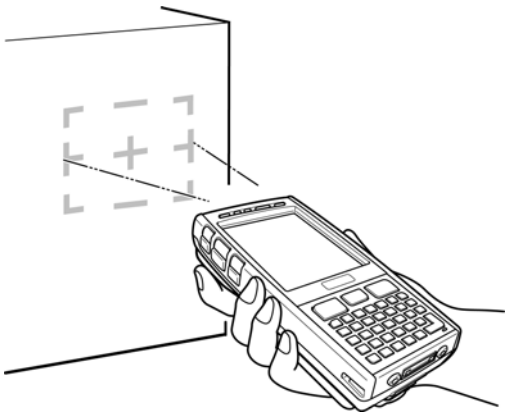
3.1 Scanning 2D Codes or Barcodes

Follow the procedure below to scan 2D codes or barcodes.

1. Turn the BHT power ON.

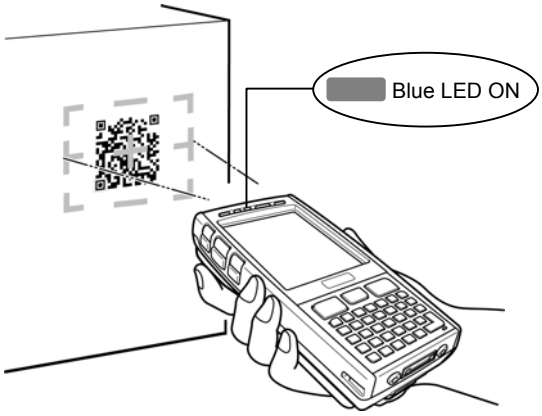


2. Bring the reading window to a target code to be scanned, and press the trigger switch.



3. The BHT turns the marker beam (laser) and illumination LED on to indicate the scanning range and scan the target code, respectively.

   Codes can be read also by pressing the **Scan** key.
   When the BHT has read the code successfully,
   the indicator LED will illuminate in blue.



– Point – The code scanning method may differ depending on the application. Perform scanning in accordance with the instructions provided in the application User's Manual.

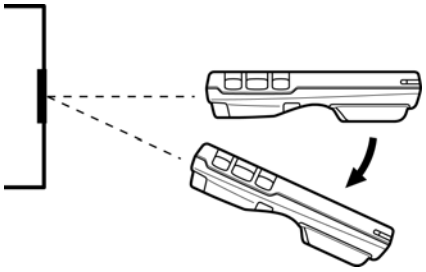
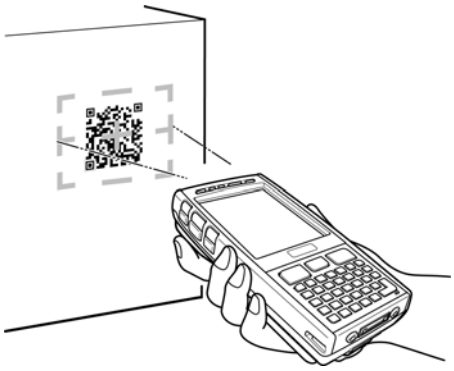
– Note –

- If required, clean dirty labels before scanning.
- It may not be possible to perform scanning in direct sunlight.
- If the code is on a curved surface, perform scanning in the center of the laser light emission range.
- If the code reading window is pulled away from the code, the scannable code range will become narrower than that of the laser light emission.
- Do not use the BHT in the vicinity of radio equipment. This may cause the BHT to malfunction.

– Note –

- A laser used to indicate the scanning position and LED used to scan the code illuminate when scanning. The intensity of the laser light and illumination LED will vary depending on the scanning conditions and variation of its elements.
- By using the “KbifCE” utility software, codes read by the BHT can be converted into keypad data to be transmitted to an application program. The utility software can be downloaded from the DENSO WAVE Web site (http://www.denso-wave.com/). For further details, refer to the “2D Code Scanner/Barcode Scanner Keyboard Interface with BHT-CE kbifCE User's Guide“ provided with the software.

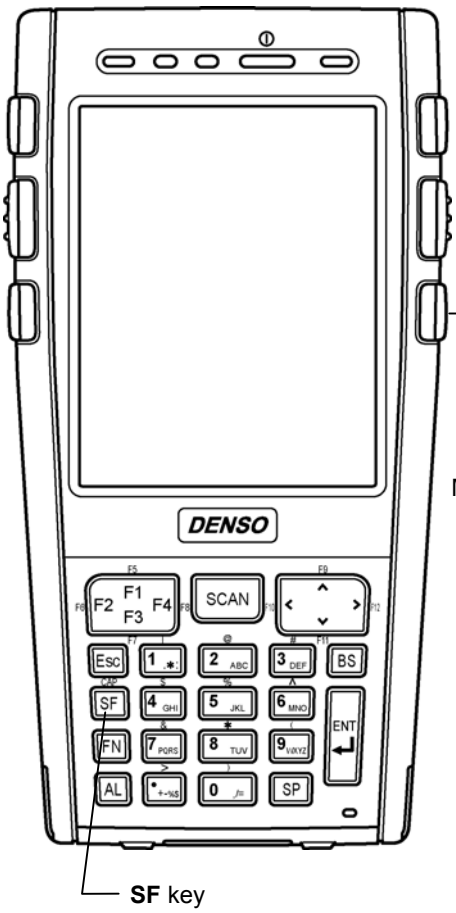
When unable to successfully read codes…

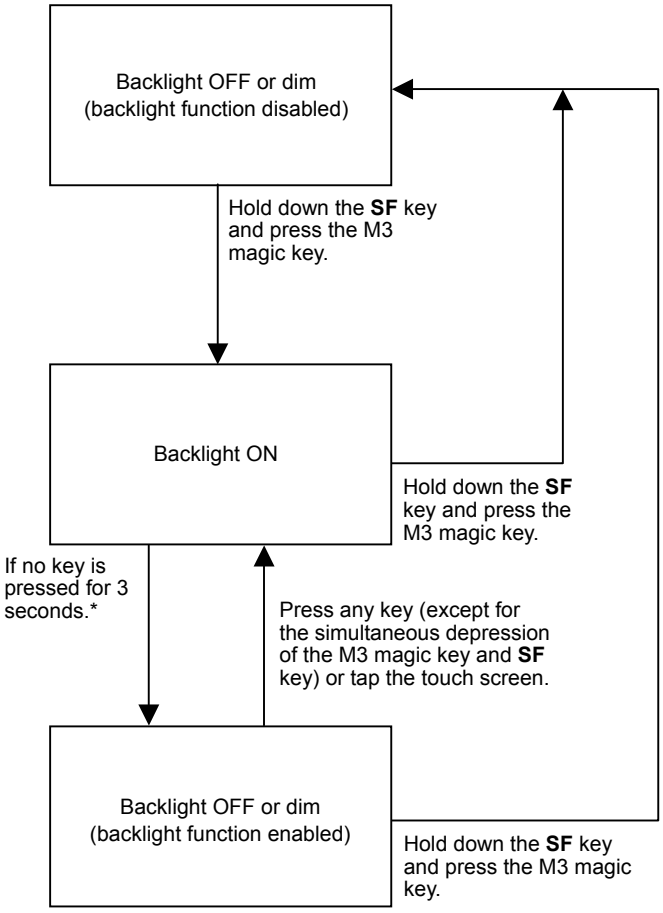
Cause		Countermeasure
Specular reflection	When the illumination LED is focused on the printed surface of the code from directly above, there are times when scanning is unsuccessful due to specular reflection.	Change the BHT scanning angle and try again. 
Distance from code	Scanning may be unsuccessful if the BHT reading window is too close to or too far from the code, even when the code is within the marker beam range.	Move the BHT slowly toward or away from the code and try again. The marker beam range is only a guideline. The actual scanning range is narrower than the marker beam range. The scanning range is 2.4" (6 cm) wide by 1.6" (4 cm) high when the scanning distance is approx. 4.3" (11 cm). 
Code surface curvature	Scanning may be unsuccessful if the code surface is curved.	Scan the code at the center of the code reading window.
Code surface dirt	Scanning may be unsuccessful if the code surface is dirty.	Wipe the dirt from the code and try again.
Code reading window dirt	Scanning may be unsuccessful if the code reading window is dirty.	Blow any dust away with an airbrush, and then gently wipe the reading window with a cotton swab or similar soft object.
Direct sunlight, ambient light	Code scanning may be adversely affected by direct sunlight or the brightness of the surrounding light.	Perform code scanning away from direct sunlight. Try adjusting the brightness of the surrounding light when scanning indoors.

3.2 Turning ON/OFF the Backlight

To turn the backlight ON or OFF, hold down the **SF** key and press the M3 magic key.

27-Keypad




Backlight OFF or dim
(backlight function disabled)
Hold down the SF key and press the M3 magic key.
Backlight ON
Hold down the SF key and press the M3 magic key.
If no key is pressed for 3 seconds.*
Press any key (except for the simultaneous depression of the M3 magic key and SF key) or tap the touch screen.
Backlight OFF or dim
(backlight function enabled)
Hold down the SF key and press the M3 magic key.

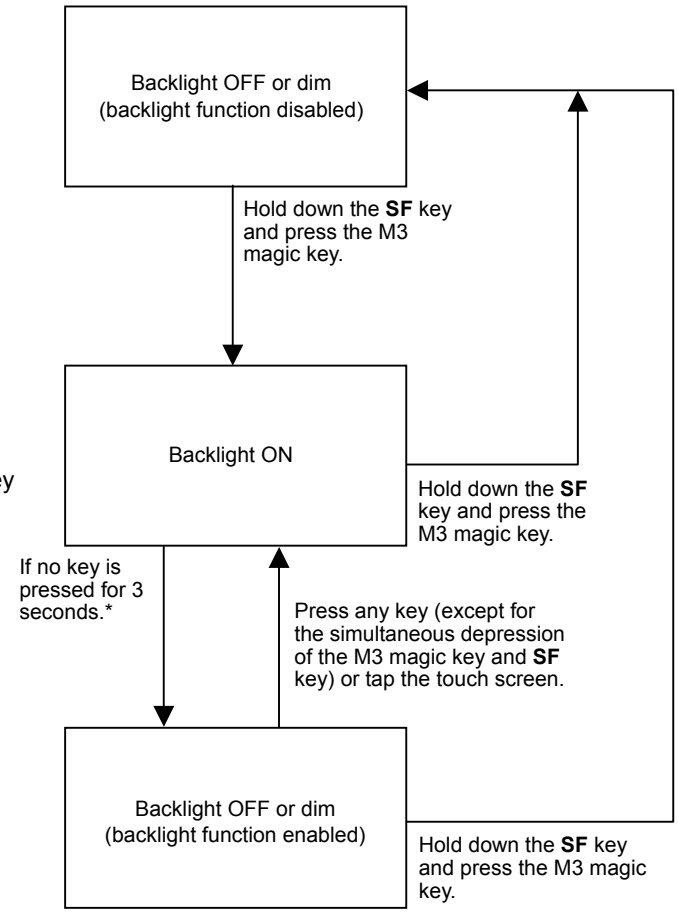
* Under 1 minute if the BHT is placed on the CU.

– **Point** –

- The backlight function enable/disable key (simultaneous pressing of **SF** key and M3 magic key set as default) and time until auto OFF can be set at user programs.
- As opposed to pressing the backlight function enable/disable key, the backlight function can be enabled or disabled at the Backlight settings menu.

To turn the backlight ON or OFF, hold down the **SF** key and press the M3 magic key.

42-Keypad


Backlight OFF or dim
(backlight function disabled)
Hold down the SF key and press the M3 magic key.
Backlight ON
Hold down the SF key and press the M3 magic key.
If no key is pressed for 3 seconds.*
Press any key (except for the simultaneous depression of the M3 magic key and SF key) or tap the touch screen.
Backlight OFF or dim
(backlight function enabled)
Hold down the SF key and press the M3 magic key.

***** Under 1 minute if the BHT is placed on the CU.

– Point –

- The backlight function enable/disable key (simultaneous pressing of **SF** key and M3 magic key set as default) and time until auto OFF can be set at user programs.
- As opposed to pressing the backlight function enable/disable key, the backlight function can be enabled or disabled at the Backlight settings menu.

3.3 Using the Keypad

3.3.1 Entering Numerical Data

27-Keypad

The default setting is numeric entry mode, enabling numbers written on the left of the top of numeric keys to be entered.

To enter “120” for example, press the “1”, “2” and “0” keys sequentially.

If the wrong number is incorrectly entered, press the **BS** key to delete the number and then reenter the correct number.

42-Keypad

Press the **NUM** key to switch to numeric entry mode.

Numbers or symbols written on the right of the top of alphabet keys can be entered.

Incorrectly entered numbers or symbols can be deleted with the **BS** key.

Press the **NUM** key again to return to alphabet entry mode.

It is also possible to switch to alphabet entry mode at the program. Refer to the “BHT-700-CE API Reference Manual" or "BHT-700-CE Class Library Reference Manual" for further details.

3.3.2 Entering Alphabet Data

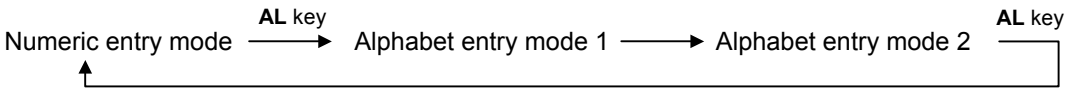
27-Keypad

The 27-Keypad is equipped with two alphabet entry methods - “alphabet entry mode 1” and “alphabet entry mode 2”.

Press the **AL** key to switch to alphabet entry mode 1.

Press the **AL** key again to switch to alphabet entry mode 2.

Press the **AL** key once again to return to numeric entry mode.



In the same manner as that for alphabet character entry with a cellular phone, alphabet characters can be entered using the numerical keys.

In alphabet entry mode 1, press a numerical key to display the alphabet character assigned to that key in the ALP window.

(Refer to “Chapter 1 Outline” – “1.2.3 BHT Screen”.) and then press the **ENT** key to set that character. Press the **AL** key again to return to numeric entry mode.

In alphabet entry mode 2, by pressing the same key repeatedly, characters display not in the ALP window, but in order at the cursor position.

The cursor position will shift if a different key is pressed.

42-Keypad

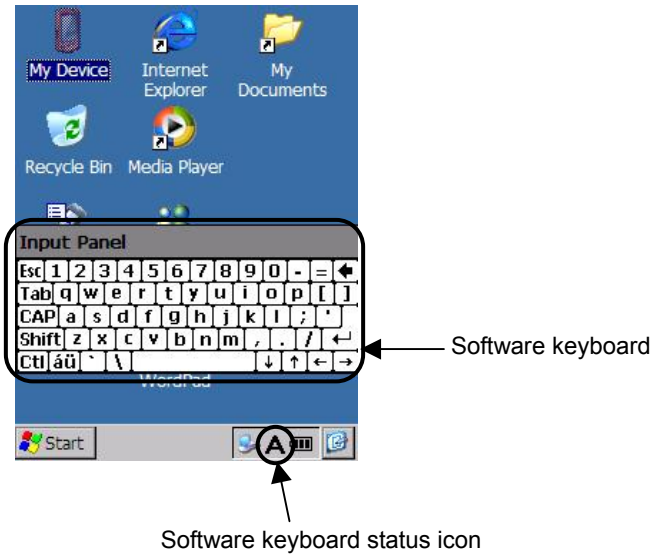
The default setting is alphabet entry mode, enabling alphabet characters written on the left of the top of alphabet keys to be entered.

Incorrectly entered characters can be deleted with the **BS** key.

It is also possible to switch to alphabet entry mode at the program. Refer to the “BHT-700-CE API Reference Manual" or "BHT-700-CE Class Library Reference Manual" for further details.

3.3.3 Using the Software Keyboard

Tap the software keyboard status icon in the taskbar to display/hide the software keyboard.
Similarly, the software keyboard is displayed by pressing the **M2** key while holding down the **SF** key.

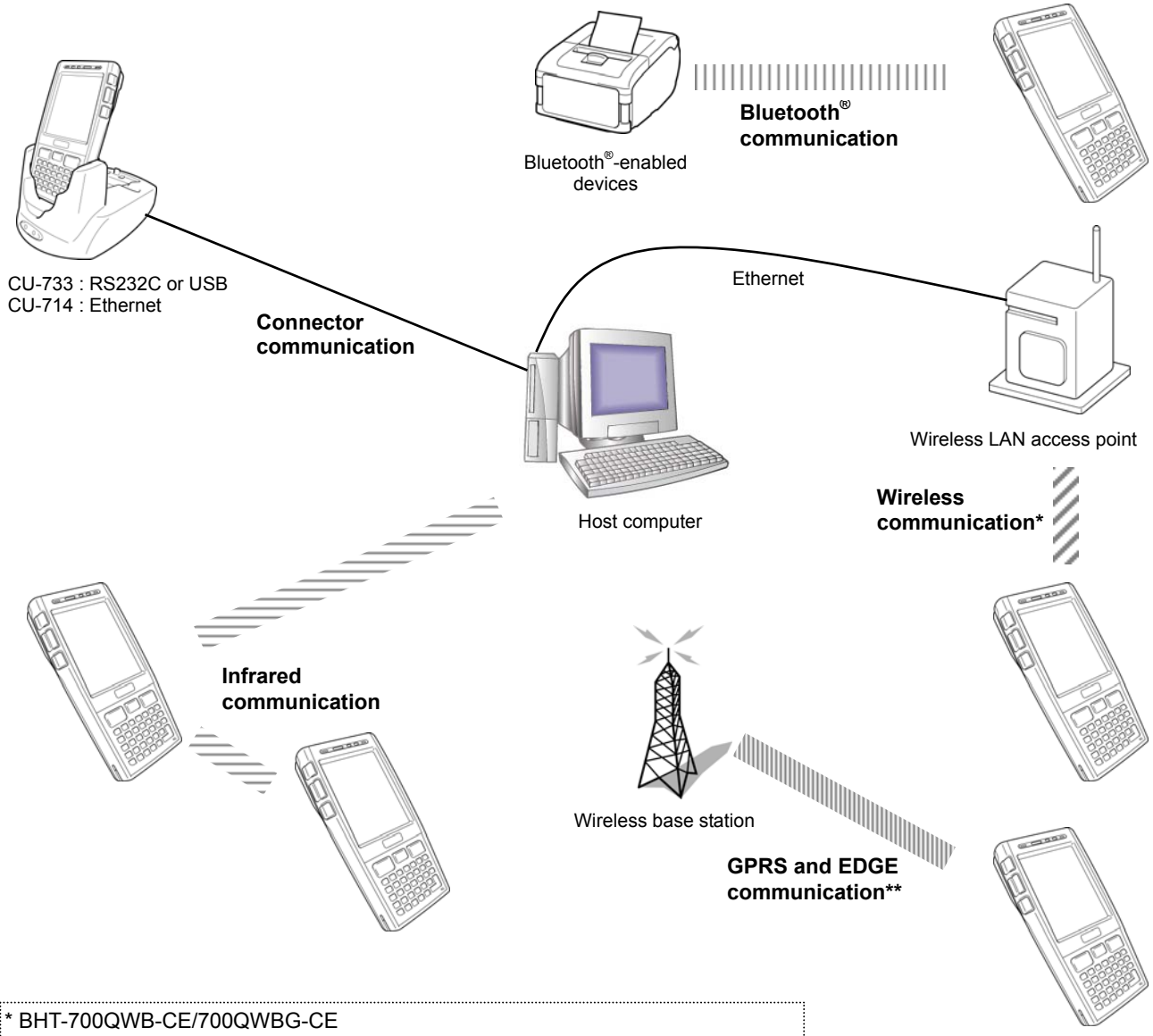


Data can be entered by tapping the keys on the software keyboard.

3.4 Transmitting Data

Data gathered by the BHT can be transmitted to the host computer by connector communication, infrared communication, Bluetooth® communication, wireless communication or GPRS and EDGE communication*.
The data transmission method and BHT setting method will differ depending on the system used, and therefore the system administrator should be contacted for details of operation.

Request
Data gathered by the BHT should be promptly uploaded to the host computer.

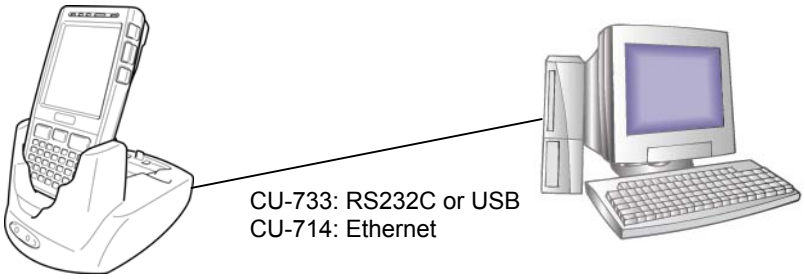


* BHT-700QWB-CE/700QWBG-CE
To perform wireless communication with a wireless LAN access point, it is necessary to configure the wireless local area network (wireless LAN) at the BHT and access point.
** BHT-700QWBG-CE only
It is necessary to establish a contract with a service provider and acquire a SIM card in order to perform packet data communication.

3.4.1 Connector Communication

Depending on the computer interface to which the BHT is being connected, or the communcation unit used, the user can choose between an RS-232C, USB or Ethernet connection.

Place the BHT on the communication unit (CU-733, CU-714) and transmit data.



Requests

Handling the CU-714

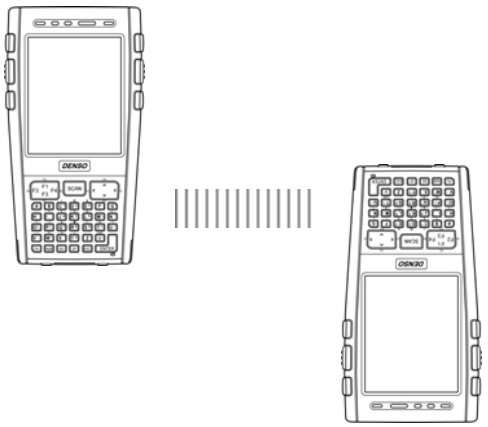
- A Category 5 (Cat 5) LAN cable or higher is required when using the CU-714 in 100BASE-TX networks. Successful communication may not be possible with other cables.
- Do not forcibly insert the LAN connector or pull the cable strongly. Failure to observe this may result in damage to the connector or cable.
- The MAC address is written on the nameplate on the rear of the CU-714.

The BHT-700 RS-232C interface has no signal line for ActiveSync connection, and therefore ActiveSync connection via RS-232C cannot be used.

3.4.2 Infrared Communication

◆ When performing data communication between BHT units

Point the BHT infrared communication ports toward each other and perform communication.



Requests

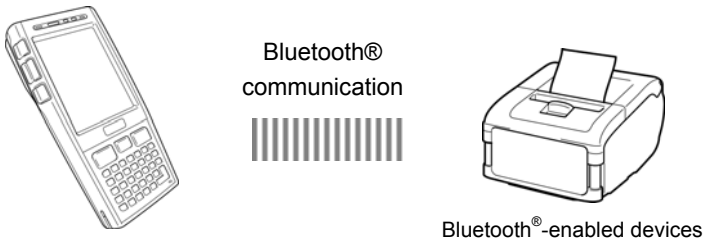
- Ensure that the light path between the BHT and any target stations is not obstructed.
- Perform communication within the effective infrared emission range (15 cm).
- Do not operate remote control units for televisions and so forth in the vicinity of infrared communication. This may result in comunication failure.
- Perform communication in locations where the BHT units will not be exposed to light interference from sources such as intence ambient lighting (inverter-driven fluorescent lighting, in particular) or direct sunlight. This may result in comunication failure.

◆ When performing data communication with the host computer

Data can be transmitted directly to the host computer if the computer is equipped with an infrared communication port.

3.4.3 Bluetooth® Communication

This interface permits wireless communications with other Bluetooth®-enabled devices.



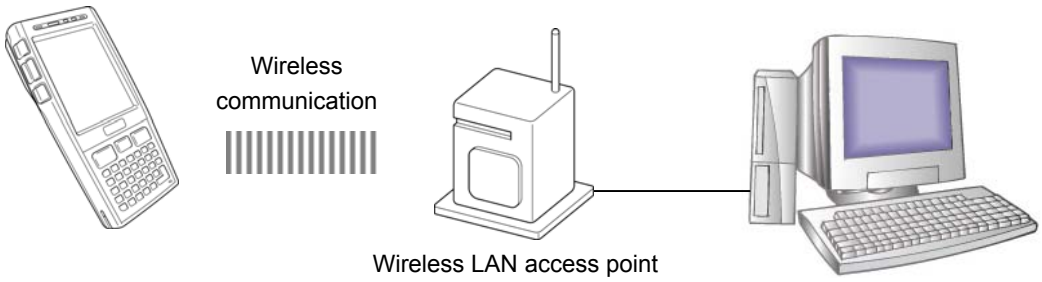
The BHT supports the following profiles:
- DUN-DT Profile
- Generic Access Profile
- Serial-DevA Profile
- Serial-DevB Profile
- Service Discovery Profile

Requests

Pointing the BHT in the direction of the other device sometimes improves communications over the link.

3.4.4 Wireless Communication

Transmit data to host computer via the wireless LAN access point.
To perform wireless communication, it is necessary to configure the wireless local area network (wireless LAN) at the BHT and access point.



Requests

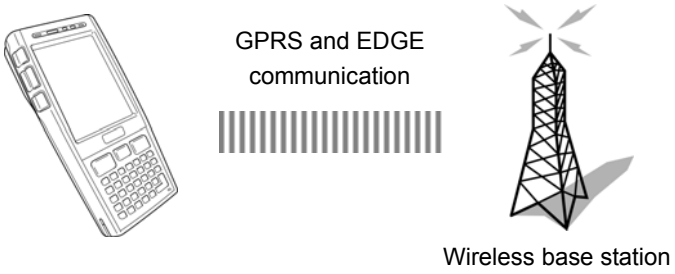
- Point the antenna on top of the BHT toward the access point to improve communication performance.
- Communication may not be possible at the following locations.
  1. In the vicinity of devices operating on the same 2.4/5 GHz waveband as the BHT such as microwave ovens, industrial heating equipment, or high-frequency medical equipment.
  2. In the vicinity of computers or household appliances such as refridgerators that emit electromagnetic noise.
  3. In the vicinity of metallic objects, in places with high levels of metallic dust, in rooms surrounded by metal walls (metallic influence), or places where the BHT may be subject to strong impact.

3.4.5 GPRS and EDGE Communication

*BHT-700QWBG-CE only

The BHT can perform packet data communication using GSM system mobile phone networks via a wireless base station.

It is necessary to establish a contract with a service provider and acquire a SIM card in order to perform packet data communication.



Chapter 4
System Operation

This chapter describes how to operate the desktop, Start menu and System Menu, and how to make wireless network settings.

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4.2 Start Menu ····49
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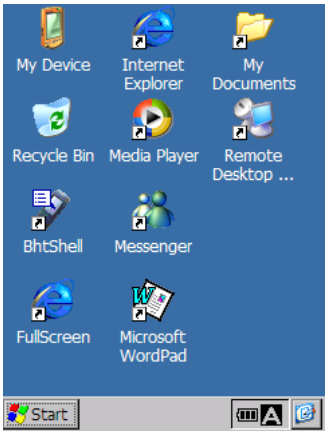
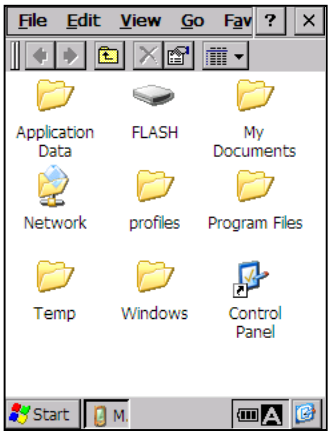
4.1 Desktop

The desktop displays when initial setup (See “Chapter 2 BHT Preparation” – “2.4 Initial Setup”.) is complete.
All programs can be started up by double-tapping their respective icons on the desktop.



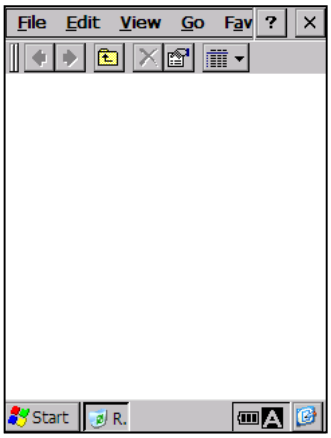
◆ My Device

Double-tap the “My Device” icon on the desktop to display the screen on the right. This program can be used to browse file information and so on in the BHT.



◆ Recycle Bin

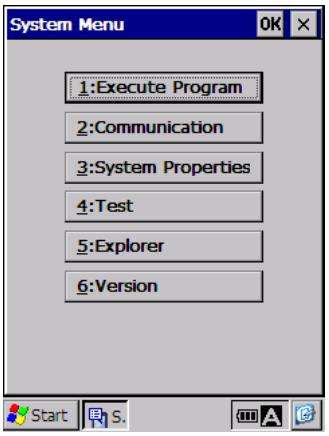
Double-tap the “Recycle Bin” icon on the desktop to display the screen on the right.
Files deleted in the BHT are stored in the Recycle Bin.
To retrieve deleted files from the Recycle Bin, select the applicable file and tap [File(F)] – [Restore(E)].
To delete specific files in the Recycle Bin from the BHT memory, select the applicable file and tap [File(D)] – [Delete(D)].
To delete all files in the Recycle Bin from the BHT memory, select the applicable file and tap [File(D)] – [Empty Recycle Bin(B)].



– **Note** – Files deleted in the “FLASH” folder are deleted directly from the BHT memory, without being stored to the Recycle Bin.

◆ BhtShell

Double-tap the “BhtShell” shortcut icon on the desktop to display the screen on the right.
Refer to “4.4 System Menu Details” for further details on this program.



◆ Internet Explorer

Double-tap the “Internet Explorer” icon on the desktop to display the screen on the right (example). This program can be used to browse Web pages.

– Note – It is necessary to make wireless settings and open the wireless device before running Internet Explorer. Refer to “4.4.3 System Properties” – “[8] NIC Control”, or “4.5 Wireless Network Settings” for further details.

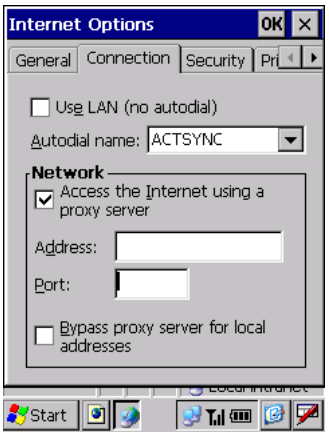
FullScreen

This is full-screen browser without menu, address, and status bar.
Double-tap the "FullScreen" icon on the desktop to display the screen on the right(example).
The function is basically same as "Internet Explorer".

– Note – **Configuring the Proxy Server**

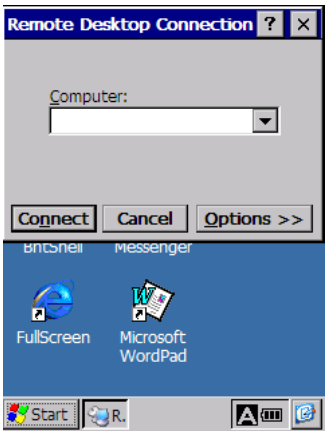
Select [View(V)] – [Internet Options(O)] from the Internet Explorer menu to display the “Internet Options” screen.

Tap the “Connection” tabbed page to display the screen on the right and then make the Internet connection settings.



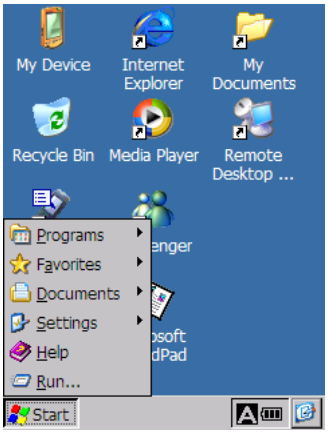
◆ Remote Desktop Connection

Double-tap the “Remote Desktop Connection” icon on the desktop to display the screen on the right. This program can be used to remotely operate the desktop on other computers.



4.2 Start Menu

Tap the Start button in the bottom left corner of the desktop to display the screen on the right.
This menu can be used to run programs and make system settings.



◆ kbifCE

From the **Start** menu, tap [Programs(P)] – [kbifCE] - [kbifCE] to display the icon shown in the task bar in the screen on the right and permanently enable the "kbifCE" keyboard interface shift.
Refer to the "2D Code Scanner/Barcode Scanner Keyboard Interface with BHT-CE kbifCE User's Guide" for further details on kbifCE.

◆ Terminal

From the **Start** menu, tap [Programs(P)] – [Communication] - [Terminal] to display the screen on the right.
Double-tap the "Make New Session" icon and perform settings in accordance with the instructions given in the wizard that starts up.

◆ Internet Explorer

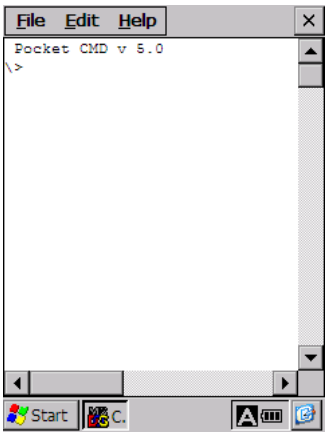
From the **Start** menu, tap [Programs(P)] – [Internet Explorer] to run Internet Explorer.
Refer to "4.1 Desktop" – "Internet Explorer" for further details.

◆ Windows Explorer

From the **Start** menu, tap [Programs(P)] – [Windows Explorer] to run Windows Explorer.
Refer to “4.1 Desktop” – “My Device” for further details.

◆ Command Prompt

From the **Start** menu, tap [Programs(P)] – [Command Prompt] to display the screen on the right.



◆ Remote Desktop Connection

From the **Start** menu, tap [Programs(P)] – [Remote Desktop Connection] to run Remote Desktop Connection.
Refer to “4.1 Desktop” – “Remote Desktop Connection” for further details.

◆ Favorites

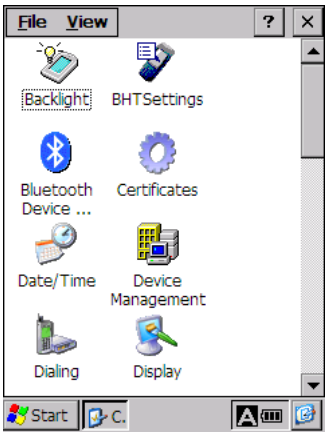
A list if files registered in Favorites displays.
To add items to the Favorites list, create a shortcut(s) of the file(s) to be added in the “¥Windows¥favorites” folder.

◆ Documents

A list of recently used files displays.
To add items to this list, use the SHAddToRecentDocs(D) standard API.
Refer to the Help item in application development tools for further details on SHAddToRecentDocs(D).

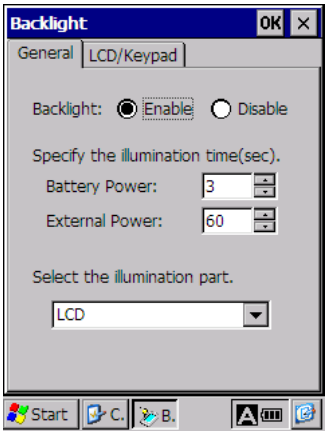
◆ Control Panel

From the **Start** menu, tap [Settings(S)] – [Control Panel(C)] to display the screen on the right.
The Control Panel can be used to configure the basic Windows operating environment.



Backlight

Double-tap the “Backlight” icon at the Control Panel to display the “Backlight” screen.
Tap the “General” tabbed page at the “Backlight” menu to display the screen on the right.



Backlight (*1)

Set whether to turn ON the backlight when keys are pressed or the screen tapped.

Enable: Backlight turns ON.
Disable: Backlight does not turn ON.

(*1) Pressing the backlight function ON/OFF key (Default setting: simultaneous pressing of **SF** key and M3 magic key) switches between the enabled and disabled states, regardless of the backlight function setting made at this screen.
Refer to “Chapter 3 Basic Operation” – “3.2 Turning ON/OFF the Backlight” for details of the backlight ON/OFF function keys.

Specify the illumination time(sec)

Set the length of time the backlight remains ON when keys are pressed or the screen tapped.

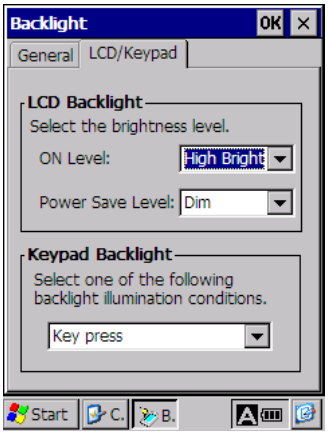
Battery Power: ON-duration when the BHT is not placed on the CU.
External Power: ON-duration when the BHT is placed on the CU.

Select the illumination part

Set the part to be illuminated when turning ON the backlight from the user application.

None
LCD
Keypad
LCD and Keypad

Tap the “LCD/Keypad” tabbed page at the “Backlight” menu to display the screen on the right.



LCD Backlight

ON Level

Select the brightness from one of the following four levels.

(Dark)

Off
Low Bright
Mid Bright
High Bright

(Bright)

Power Save Level

Change the settings for turning OFF the backlight after no keys have been pressed or the screen tapped for a specified period of time.

Dim: Dim (Backlight remains ON faintly.)
OFF: Backlight turns OFF.

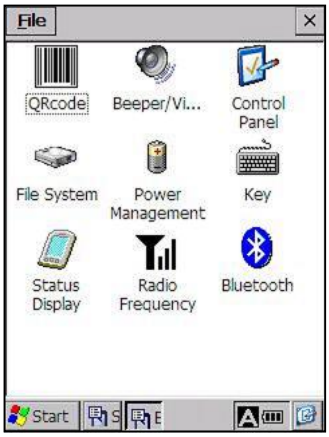
Keypad Backlight

Select one of the following keypad backlight illumination conditions.

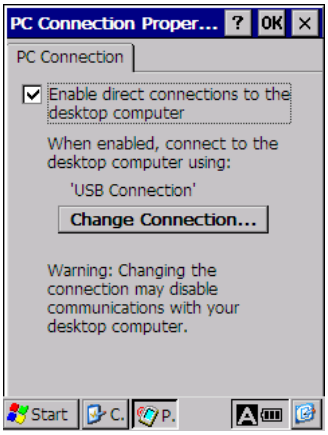
Key press or screen tap
Key press
Disable

System Properties Menus

Double-tap the “BhtSettings” icon at the Control Panel to display the System Properties menu.
Refer to “4.4.3 System Properties” for further details.



PC Connection Properties

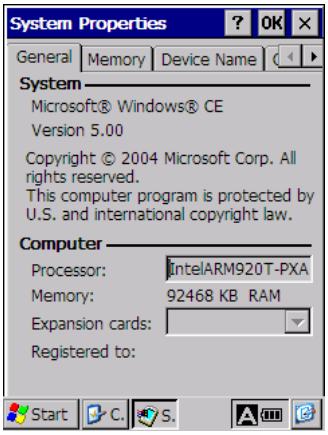

PC Connection Proper...
OK
PC Connection
Enable direct connections to the desktop computer
When enabled, connect to the desktop computer using:
'USB Connection'
Change Connection...
Warning: Changing the connection may disable communications with your desktop computer.
Start

Double-tap the “PC Connection” icon at the Control Panel to display the screen on the right.

This menu can be used to the connection method to the computer.

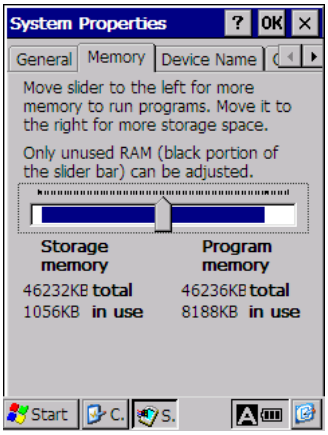
Tap the [Change Connection…] button to set the connection method.

System Properties



Double-tap the “System” icon at the Control Panel to display the “System Properties” screen.

Tap the System Properties “General” tabbed page to display the screen on the right.



Tap the System Properties “Memory” tabbed page to display the screen on the right.

The RAM memory allocation and available space can be checked at this screen.

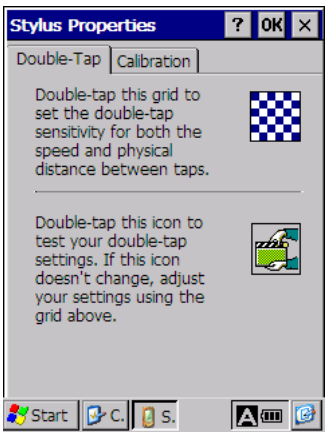
The RAM memory allocation can also be changed by moving the slider.

– Note – Allocate the memory between “Storage memory” and “Program memory” based on the operating requirements.

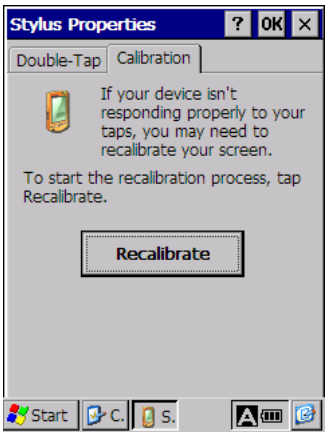
Depending on the memory allocation (e.g., insufficient program execution space), the BHT may not operate normally.

Stylus Properties

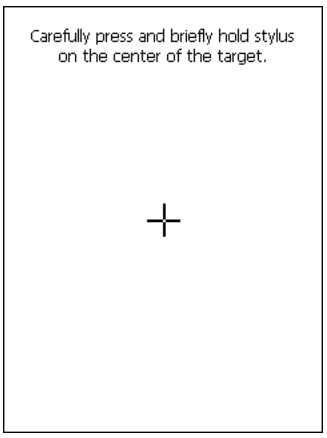
Double-tap the “Stylus” icon at the Control Panel to display the “Stylus Properties” screen.
The double-tap speed can be adjusted at this screen.


Stylus Properties
OK
Double-Tap
Calibration
Double-tap this grid to set the double-tap sensitivity for both the speed and physical distance between taps.
Double-tap this icon to test your double-tap settings. If this icon doesn't change, adjust your settings using the grid above.
Start

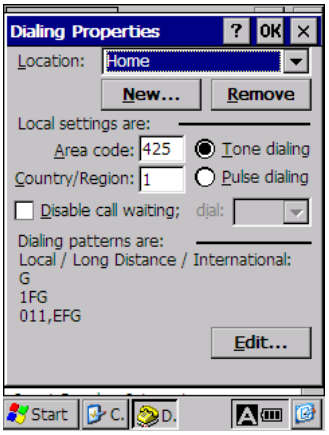
Tap the “Calibration” tabbed page to display the screen on the right.
Tap the [Recalibrate] button to perform touch screen calibration.



Follow the instructions displayed on the screen.
Refer to “Chapter 2 BHT Preparation” – “2.4 Initial Setup” for further details.

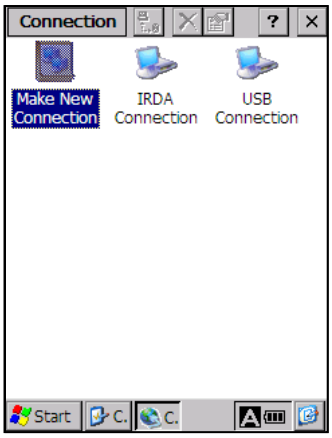


Dialing Properties



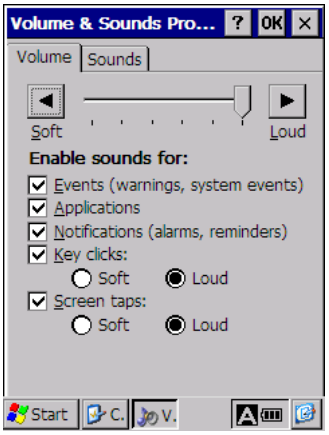
Double-tap the “Dialing” icon at the Control Panel to display the “Dialing Properties” screen.
Telephone line settings can be made at this screen.

Network and Dial-up Connection Properties



Double-tap the “Network and Dial-up Connection” icon at the Control Panel to display the screen on the right.
Double-tap the “Make New Connection” icon and set the connection name and type in accordance with the instructions given in the wizard that starts up.

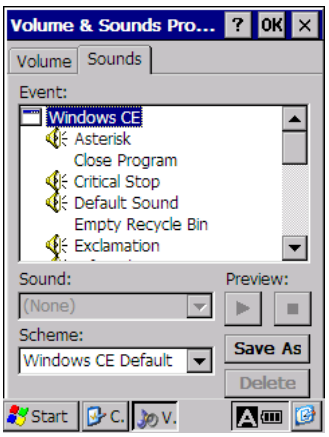
Volume and Sounds Properties



Double-tap the “Volume & Sounds” icon at the Control Panel to display the “Volume & Sounds Properties” screen.
Tap the “Volume” tabbed page to display the screen on the right.
The following settings can be made at this screen.

- Beeper volume adjustment (excluding volumes for key entry and screen taps)
- Event beeper sound enable/disable
- Application beeper sound enable/disable
- Notification beeper sound enable/disable

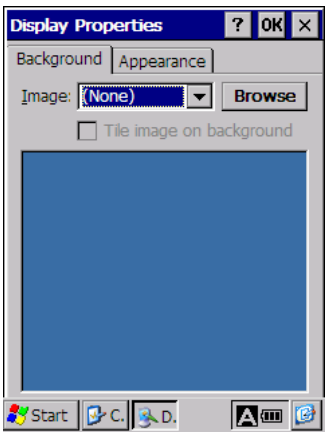
– Note – The beeper volume can be adjusted in six levels (0 to 5), however, only four levels are available in practice since levels 1 and 2 and levels 3 and 4 produce the same volume.



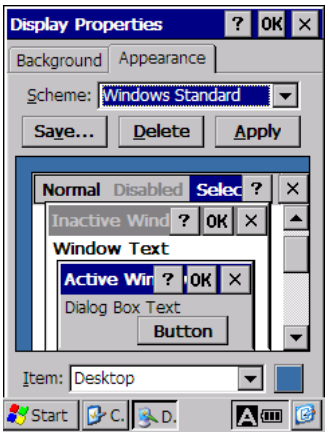
Tap the “Sounds” tabbed page to display the screen on the right. Beeper sounds for various events can be set at this page.

Display Properties

Double-tap the “Display” icon at the Control Panel to display the “Display Properties” screen.
Tap the “Background” tabbed page to display the screen on the right.
The wallpaper displayed on the desktop can be set at this screen.

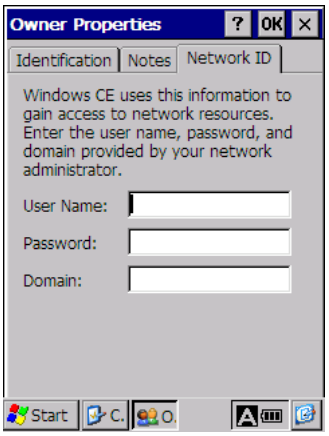


Tap the “Appearance” tabbed page to display the screen on the right.
The desktop appearance can be set at this screen.

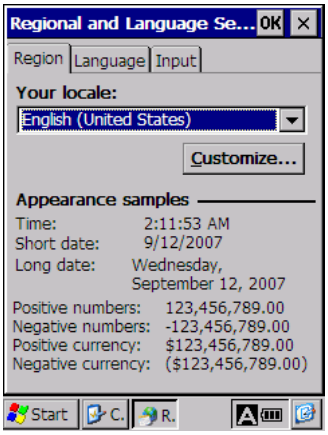


Owner Properties

Double-tap the “Owner” icon at the Control Panel to display the “Owner Properties” screen.
Tap the “Network ID” tabbed page to display the screen on the right.
The user name, password and domain required to access the network resource can be set at this screen.



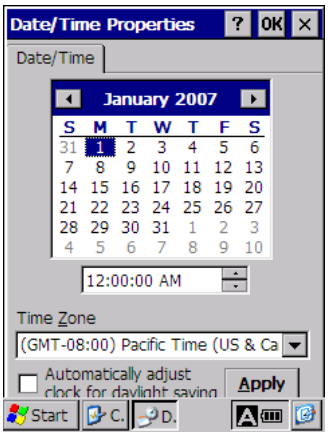
Regional and Language Settings Properties



Double-tap the “Regional and Language Settings” icon at the Control Panel to display the “Regional and Language Settings Properties” screen.
The display method for the following items can be set at this screen.

- Region
- Values
- Currency
- Time
- Date

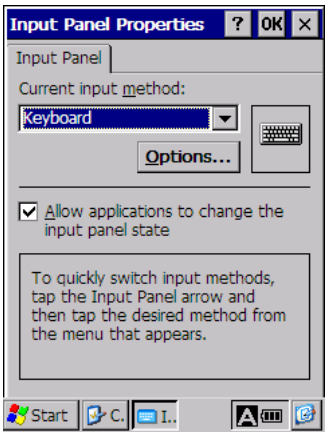
Date/Time Properties


Date/Time Properties
OK
Date/Time
January 2007
S M T W T F S
31 1 2 3 4 5 6
7 8 9 10 11 12 13
14 15 16 17 18 19 20
21 22 23 24 25 26 27
28 29 30 31 1 2 3
4 5 6 7 8 9 10
12:00:00 AM
Time Zone
(GMT-08:00) Pacific Time (US & Ca
Automatically adjust clock for daylight saving
Apply
Start

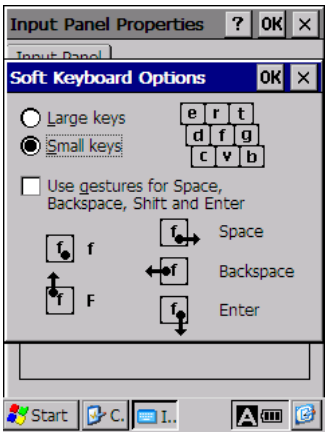
Double-tap the “Date/Time” icon at the Control Panel to display the “Date/Time Settings Properties” screen.
The date, time and time zone can be set at this screen.

– Note – The entry range for the date is 2003 to 2099.

Input Panel Properties


Input Panel Properties
OK
Input Panel
Current input method:
Keyboard
Options...
Allow applications to change the input panel state
To quickly switch input methods, tap the Input Panel arrow and then tap the desired method from the menu that appears.
Start

Double-tap the “Input Panel” icon at the Control Panel to display the “Input Panel Properties” screen.



Tap the [Options(O)…] button at the Control Panel to display the screen on the right.
The keys at the input panel (software keyboard) can be switched between small and large at this screen.

– Note – Gestures* are always active, regardless of the setting made at "Use gestures for...,".

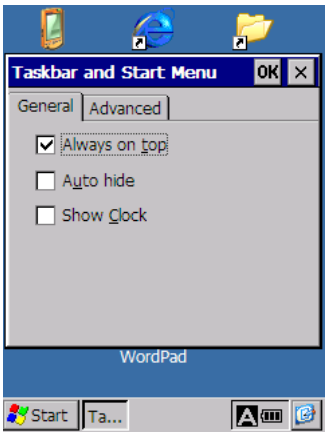
* Gestures refer to special stylus operations that enable special input at the software keyboard as shown on the right.

◆ Network and Dial-up Connection

From the **Start** menu, tap [Settings(S)] – [Network & Dial-up Connection(N)] to display the "Network & Dial-up Connection" screen.
Refer to "4.2 Start Menu" – "Control Panel" for further details.

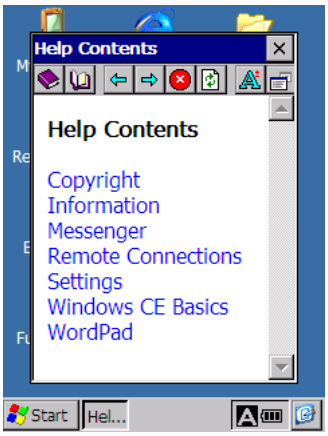
◆ Task Bar and Start Menu

From the **Start** menu, tap [Settings(S)] – [Taskbar and Start Menu(T)] to display the "Taskbar and Start Menu" screen.
Tap the "General" tabbed page to display the screen on the right.
The taskbar can be customized at this screen.



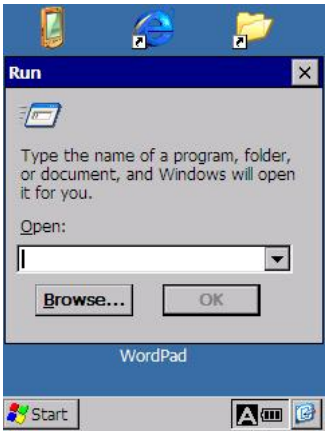
◆ Help

From the **Start** menu, tap [Help(H)] to display the screen on the right.
Contents of the Windows CE Help can be browsed at this screen.



◆ Run

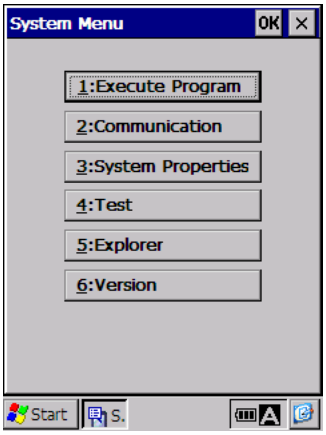
From the **Start** menu, tap [Run(R)…] to display the screen on the right.
Applications can be run and files opened from this screen.



4.3 System Menu Outline

Double-tap the “BhtShell” icon on the desktop to display the “System Menu” screen on the right.

To run items in the System Menu, tap the relevant item or press the corresponding numerical key.
To exit the System Menu, tap the OK or × button located in the top right corner of the screen.



The keys below are so designed that the function of each key is consistent in every screen.

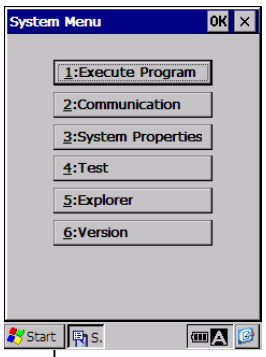
Numerical keys	Runs the item corresponding to the number displayed on the screen.
ENT key	Runs the focused (*) item.
Tab key **M1** key Cursor keys	Moves the focus.
ESC key	Returns to the previous screen. (**)

* Currently active item. In the screen above, the [1:Execute Program] is focused.

** The ESC key function is disabled at the following menus in “4.4 System Menu Details”.

- 4.4.3 System Properties
- 4.4.5 Explorer

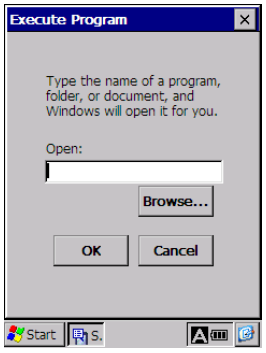
4.3.1 System Menu Structure



<System Menu>
Double-tap the "BhtShell" shortcut icon on the desktop to start up the System Menu.

Menu [1]

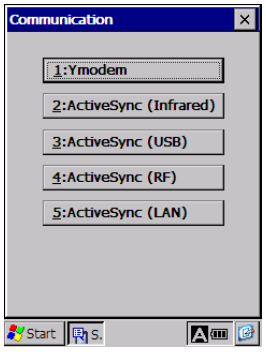
ESC key



<Execute Program>
Executes selected applications.
(Refer to "4.4.1 Execute Program Menu" for further details.)

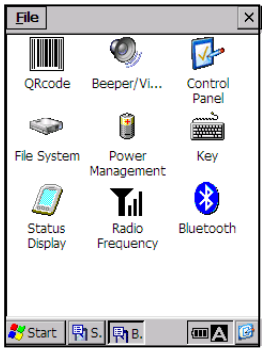
Menu [2]

ESC key

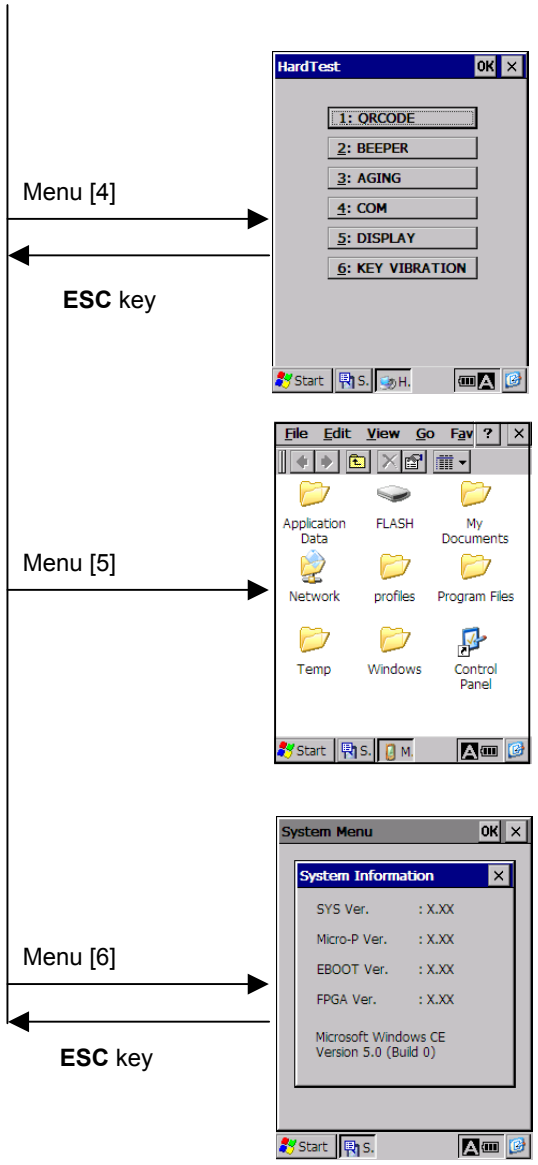


<Communication Menu>
Performs communication with the host computer.
(Refer to "4.4.2 Communication Menu" for further details.)

Menu [3]



<System Properties>
Sets various environmental conditions.
(Refer to "4.4.3 System Properties" for further details.)



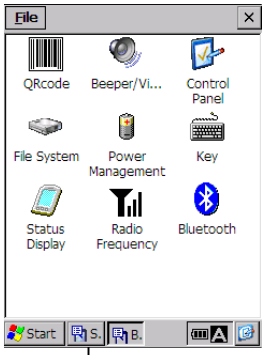
<Test Menu>
Tests various hardware operations.
(Refer to “4.4.4 HardTest Menu” for further details.)

<Explorer>
Runs Explorer.
(Refer to “4.4.5 Explorer” for further details.)

<Version>
Displays system information.
(Refer to “4.4.6 System Information” for further details.)

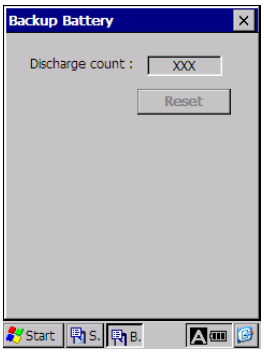
Detailed Description of the Functions in System Menu

Hold down the **SF** key and press the corresponding numerical key.



<System Properties>
Sets various environmental conditions.
(Refer to “4.4.3 System Properties” for further details.)

SF + 0 key



<Memory Back-up Power Discharge Count Reset>
Resets the memory back-up power source discharge count.

ESC key

SF + 1 key

<ActiveSync Auto Connection Setting>
Sets whether to switch to ActiveSync auto connection.

4.4 System Menu Details

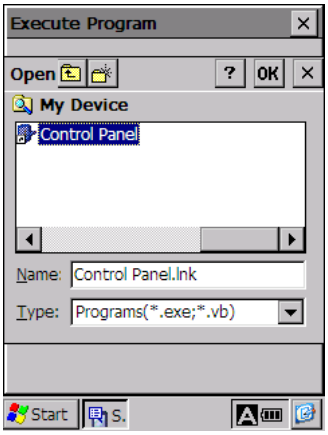
4.4.1 Execute Program Menu

Applications and so on can be started up at this menu.

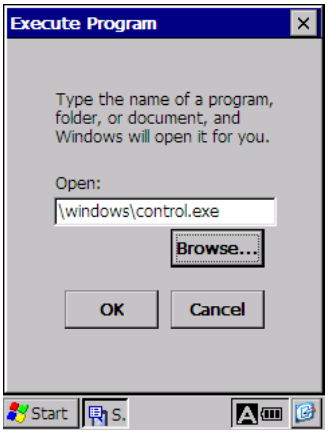
1. Tap “1: Execute Program” at the System Menu to display the screen on the right.

2. Tap the [Browse…] button to display the screen on the right.

Select the file to be started up or enter a file name.
Check that the name of the file to be started up displays in the “Name:” field and tap the [OK] button.

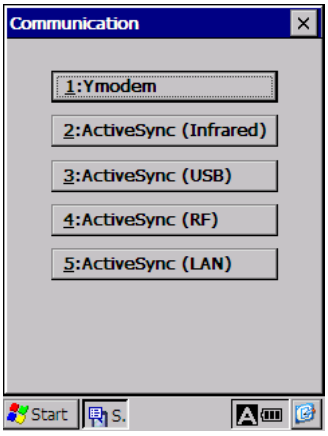


3. Check that the name of the file to be started up displays in the “Open:” field and tap the [OK] button.



4.4.2 Communication Menu

Tap “2: Communication” at the System Menu to display the screen on the right.



[1] Ymodem: Communicates with the host computer using the Ymodem.

[2] ActiveSync(Infrared): Communicates with the host computer via IrDA using ActiveSync.

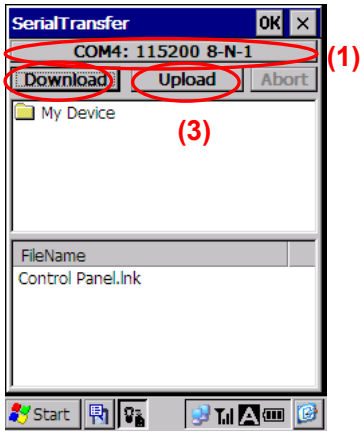
[3] ActiveSync(USB): Communicates with the host computer via USB using ActiveSync.

[4] ActiveSync(RF): Communicates with the host computer by wireless using ActiveSync.

[5] ActiveSync(LAN): Communicates with the host computer by the CU-714 using ActiveSync.

[1] Ymodem Menu

The Ymodem can be used to communicate with the host computer using the following procedure.
Select “1:Ymodem” at the Communication menu to display the screen on the right.



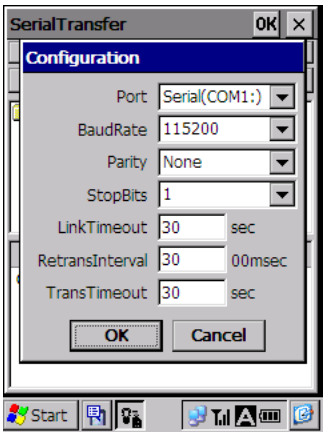
Button (1): Sets the communication environment.
Button (2): Downloads files to the BHT.
Button (3): Uploads files stored in the BHT to the host computer.

◆ Communication Environment Settings

Tap button (1) at the Ymodem menu to display the communication environment settings screen.

RS-232C Interface Settings

To perform RS-232C communication with the host computer via the connector interface port, specify “Serial(COM1:)” for “Port”. The screen on the right displays.
Specify the same settings as those at the host computer for “BaudRate”, “Parity”, “StopBits”, “LinkTimeout”, “Retrans Interval” and “TransTimeout”. Data bits are fixed at 8.



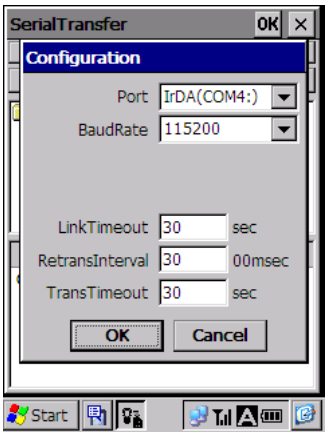
IrDA Interface Settings

To perform communication with the host computer via the IrDA interface port, specify “IrDA(COM4:)” for “Port”. The screen on the right displays. Specify the same setting as that at the host computer for “BaudRate”. All other data values are fixed at the values below.

“Databit” : 8

“Parity” : None

“StopBits” : 1



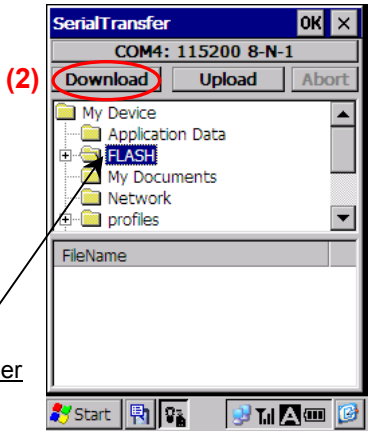
The communication environment settings following BHT initialization are as follows.

Setting	Default Value
Port	IrDA(COM4:)
BaudRate	115200bps
LinkTimeout	30sec
RetransInterval	3000msec
TransTimeout	30sec

◆ Downloading

1. Specify the download destination folder and tap button (2) to begin downloading.

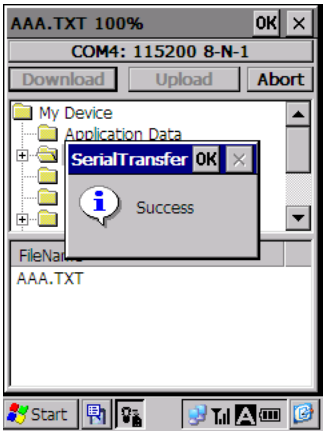
– Note – If a file with the same name as one already in the same folder is downloaded, the newly downloaded file replaces the old one.



Download destination folder

2. Downloading is now complete.

The beeper sounds once (long beep) and the screen on the right displays.



If an error occurs while downloading…

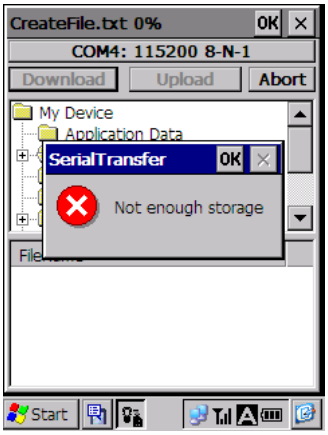
If an error occurs while downloading, the beeper sounds three times and one of the following screens displays.

ν Problem

There is insufficient memory to store downloaded files.

ν Solution

Delete any unnecessary files or reduce the size of the file being downloaded.



ν Problem

The path of the file being downloaded is too long.

ν Solution

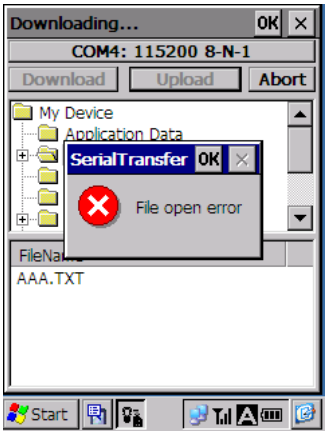
Change the file name of the file being downloaded or change the download destination folder.

ν Problem

The file being downloaded is currently open.

ν Solution

Close the file and try again.

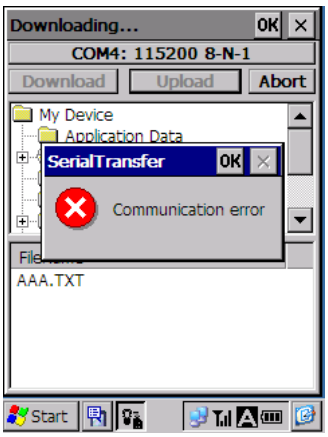


ν Problem

Downloading has failed due to a communication error.

ν Solution

Check the communication environment settings and then try again.
The communication parameters at the host computer should also be checked.

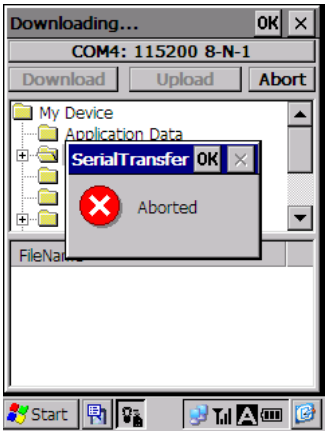


ν Problem

Downloading has been aborted.

ν Solution

Check the communication environment settings and communication log and then try again.
The communication parameters at the host computer should also be checked.

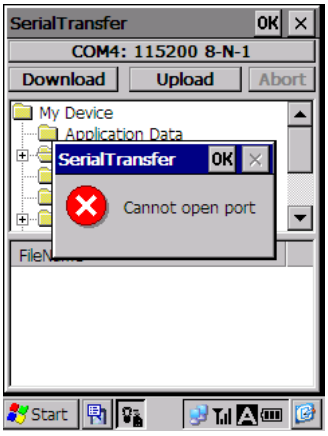


ν Problem

The communication port has already been opened.

ν Solution

Close the communication port already opened for other processing and then try again.

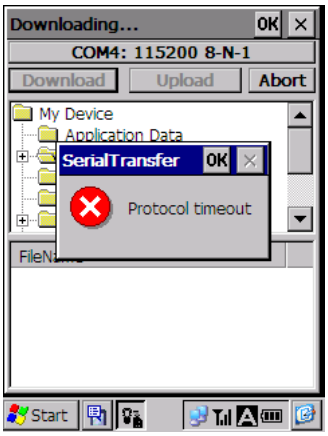


ν Problem

A timeout has occurred.

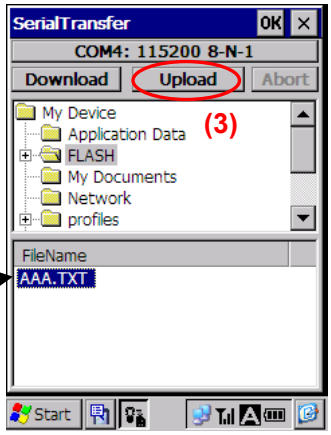
ν Solution

Check the communication environment settings and communication log and then try again.
The communication parameters at the host computer should also be checked.



◆ Uploading

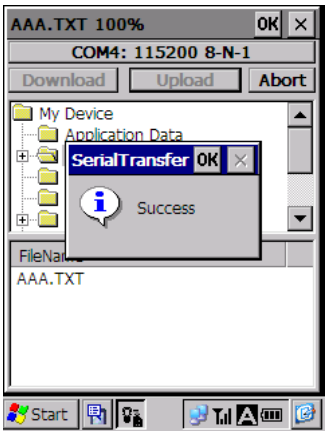
1. Specify the file to be uploaded and tap button (3) to begin uploading.



File to be uploaded

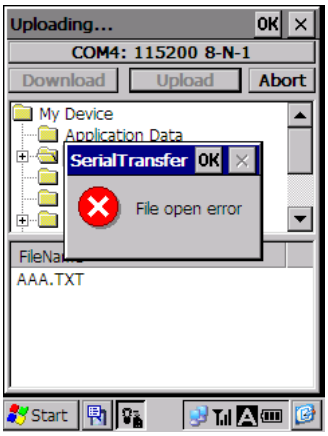
2. Uploading is now complete.

The beeper sounds once (long beep) and the screen on the right displays.



If an error occurs during uploading…

If an error occurs while uploading, the beeper sounds three times and one of the following screens displays.



ν Problem

The file being uploaded is currently open.

ν Solution

Close the file and try again.

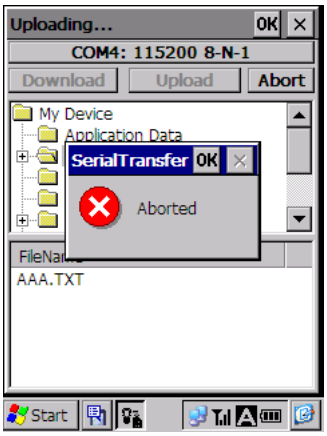
ν Problem

Uploading has been aborted.

ν Solution

Check the communication environment settings and communication log and then try again.

The communication parameters at the host computer should also be checked.

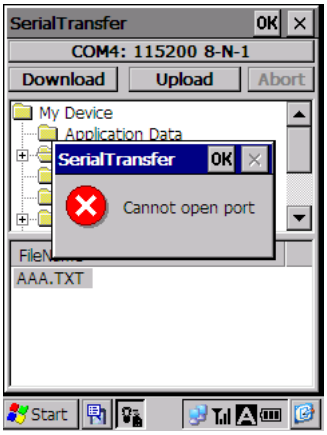


ν Problem

The communication port has already been opened.

ν Solution

Close the communication port already opened for other processing and then try again.



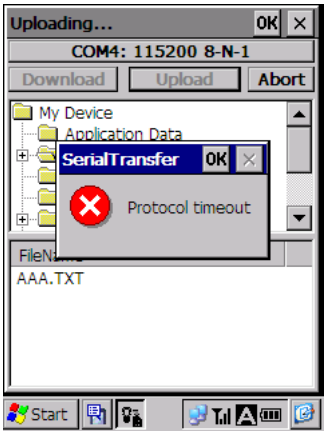
ν Problem

A timeout has occurred.

ν Solution

Check the communication environment settings and communication log and then try again.

The communication parameters at the host computer should also be checked.

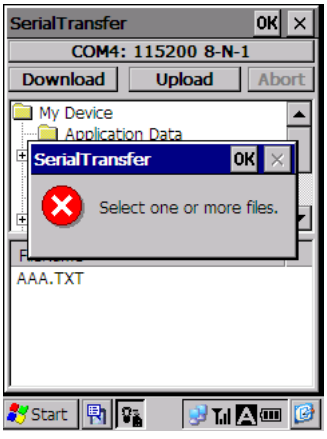


ν Problem

No file has been correctly selected for uploading.

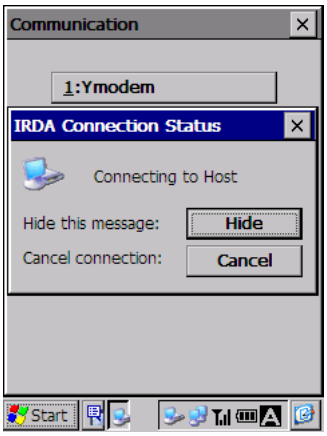
ν Solution

Select the file(s) to be uploaded and then try again.



[2] ActiveSync(Infrared)

Tap “2:ActiveSync(Infrared)” at the Communication menu to connect to the host computer via the IrDA interface port.
The screen on the right displays when a connection has been established.
Refer to “Chapter 5 Communication” – “5.6 ActiveSync” for further details on configuration of the host computer and connection using ActiveSync.

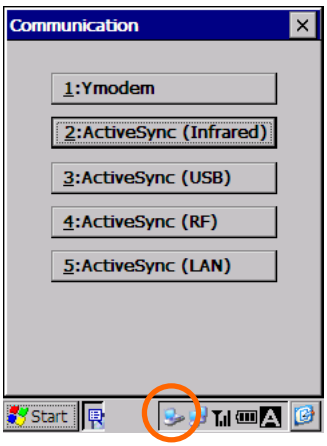


– Note – When connecting the BHT to the host computer, ensure that the BHT and host computer IrDA interface ports are facing each other directly.

When using the CU-733 with RS-232C interface port to connect the BHT to the host, it is not possible to establish a connection using ActiveSync.

If ActiveSync connection is successful…

If ActiveSync connection is successful, the beeper sounds once and the ActiveSync icon displays in the task tray (circled in red on right).

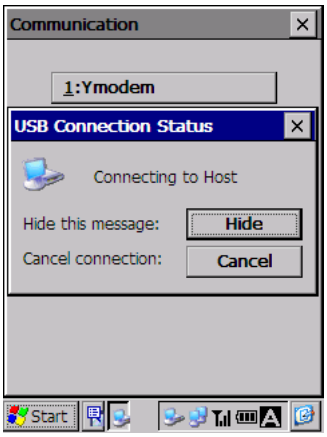


If ActiveSync connection fails…

If ActiveSync connection fails, the ActiveSync icon does not display.

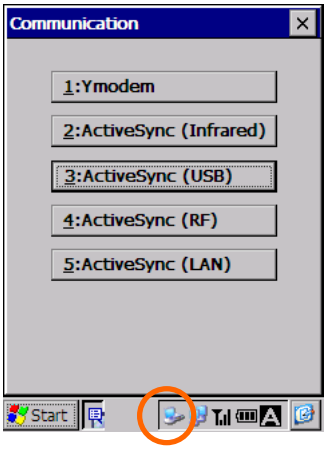
[3] ActiveSync(USB)

Tap “3:ActiveSync(USB)” at the Communication menu to connect to the host computer via USB using the connector interface port.
The screen on the right displays when a connection has been established.
Refer to “Chapter 5 Communication” – “5.6 ActiveSync” for further details on configuration of the host computer and connection using ActiveSync.



– Note – The BHT can be set up to enable ActiveSync to start up automatically and connect to the host computer by connecting the USB cable to the BHT with the power ON.
Refer to “4.4.3 System Properties” for further details.

If ActiveSync connection is successful…
If ActiveSync connection is successful, the beeper sounds once and the ActiveSync icon displays in the task tray (circled in red on right).



If ActiveSync connection fails…
If ActiveSync connection fails, the ActiveSync icon does not display.

[4] ActiveSync(RF)

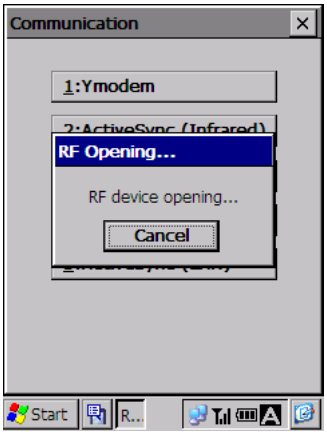
Tap “4:ActiveSync(RF)” at the Communication menu to connect to the host computer by wireless communication.

– Point –

- Before running “ActiveSync(RF)”, it is necessary to set up a partnership between the host computer and BHT by running "ActiveSync (Infrared)" or "ActiveSync (USB)".
- It will not be possible to run “ActiveSync(RF)” if the wireless settings are incorrect. Refer to “4.4.3 System Properties” – “[8] NIC Control”, or “4.5 Wireless Network Settings” before making wireless settings.
- ActiveSync(RF) cannot be used with ActiveSync 4.X. Use ActiveSync 3.8 or earlier version.

1. Open the wireless device.

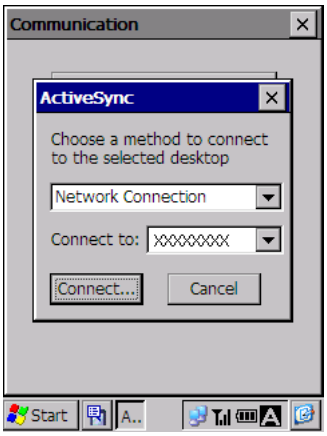
The screen on the right displays when a connection to the network has been established.



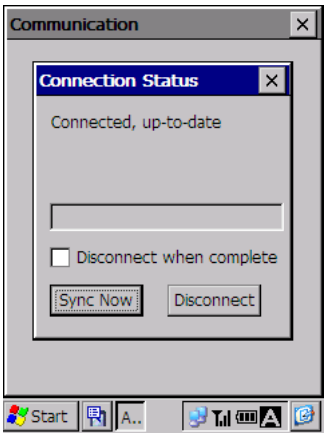
– Note –

- Connecting to the network may take several tens of seconds depending upon the network environment. (When the DHCP is used to obtain an IP address, connecting to the network will require more time than when the IP address is fixed.)
- If unable to establish a connection to the network, the wireless settings may be incorrect. Check the wireless settings again.

2. Select "Network Connection" for the connection method, specify the name of the host computer in the "Connect to" field, and tap the [Connect] button.



3. The screen on the right displays when connection is complete.



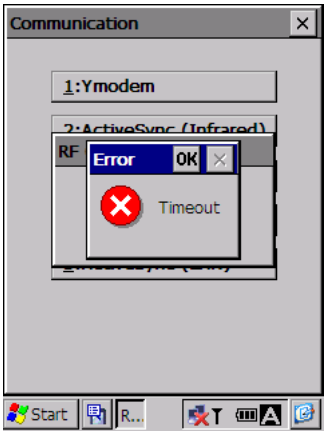
If connection to the network fails…

If connection to the network fails, a warning beeper sounds three times, and the screen on the right displays.

ν Solution

The wireless settings may be incorrect.

Refer to “4.4.3 System Properties” – “[8] NIC Control”, or “4.5 Wireless Network Settings” and then make the wireless settings.

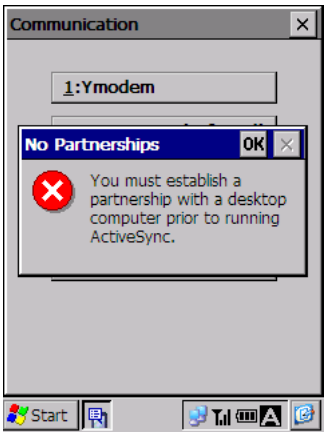


If no partnership has been set up…

If no partnership has been set up between the host computer and BHT, the beeper sounds three times, and the screen on the right displays.

ν Solution

Refer to “Chapter 5 Communication” – “5.6 ActiveSync” and set up a partnership between the host computer and BHT.

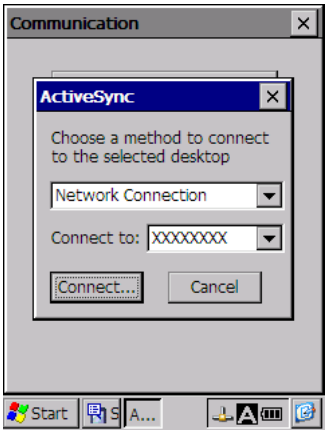


[5] ActiveSync(LAN)

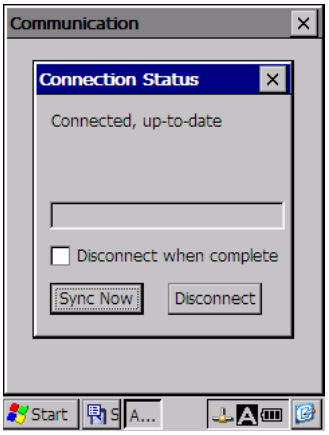
Tap “5:ActiveSync(LAN)” at the Communication menu to connect to the host computer by CU-714 communication.

– Point –
- Before running "ActiveSync(LAN)", it is necessary to set up a partnership between the host computer and BHT by running "ActiveSync (Infrared)" or "ActiveSync (USB)".
- Before running "ActiveSync(LAN)", it is necessary to set BHT on CU-714.
- ActiveSync(LAN) cannot be used with ActiveSync 4.X. Use ActiveSync 3.8 or earlier version.

1. Select "Network Connection" for the connection method, specify the name of the host computer in the "Connect to" field, and tap the [Connect] button.

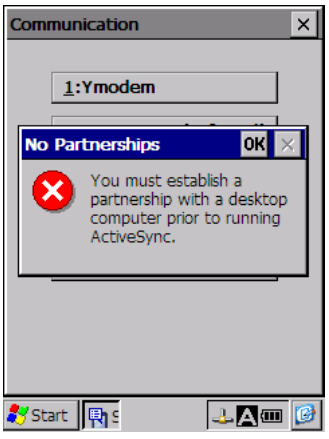


2. The screen on the right displays when connection is complete.



If no partnership has been set up…

If no partnership has been set up between the host computer and BHT, the beeper sounds three times, and the screen on the right displays.

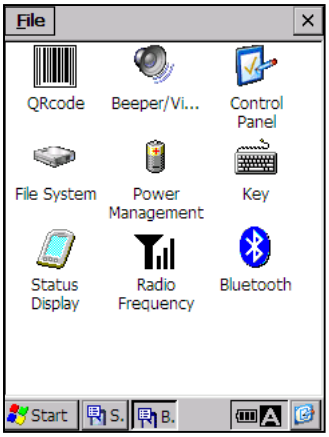


ν Solution

Refer to “Chapter 5 Communication” – “5.6 ActiveSync” and set up a partnership between the host computer and BHT.

4.4.3 System Properties

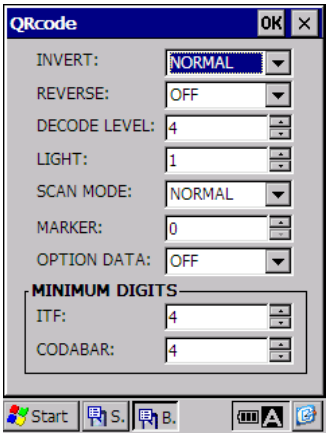
Tap “3:System Properties” at the System Menu to display the screen on the right.



[1] QRcode: Opens the code menu.
[2] Beeper/Vibration: Opens the Beeper/Vibration menu.
[3] Control Panel: Opens the Control Panel.
[4] File System: Opens the File System menu.
[5] Power Management: Opens the Power Management menu.
[6] Key: Opens the Key menu.
[7] Status Display: Opens the Status Display menu.
[8] Radio Frequency: Opens the NIC Control menu.
[9] Bluetooth: Opens the Bluetooth® menu.

[1] QRcode Menu

Double-tap “QRcode” at the System Properties screen to display the screen on the right.



INVERT: Enables/disables the black-and-white inverted label read function.
REVERSE: Enables/disables the mirror image 2D code reading function.
DECODE LEVEL: Sets the decode level.
LIGHT: Selects the LIGHT mode.
SCAN MODE: Selects the SCAN mode.
MARKER: Sets the marker indicator.
OPTION DATA: Selects whether or not option data will be added to the tail of 2D code data read.

MINIMUM DIGITS:
ITF: Sets the default minimum number of digits to be read for ITF.
CODABAR: Sets the default minimum number of digits to be read for Codabar.

Black-and-white inverted code reading function (INVERT)
This function makes it possible to read white cells/bars on a black background.

NORMAL: Normal code (black cells/bars on a white background) reading
INVERT: Invert code (white cells/bars on a black background) reading
AUTO: Both types of codes reading (automatic detection)

– Note – The automatic detection reading may take more than normal code or invert code reading.

Mirror image 2D code reading function (REVERSE)

2D codes can be read from the surface or reverse side. The enabling or disabling of 2D code reading from the reverse side can be selected at the QR Code Menu or with the settings software.

– Note – The mirror image 2D code reading is enabled, the time required for reading may increase.

DECODE LEVEL

The decode level may be set by the user. Lowering the level increases the code scanning efficiency, however, the risk of misreading poor-quality codes (broken bars, dirty) also increases. Raising the level, on the other hand, decreases the code scanning efficiency, but lowers the possibility of misreading.
The setting range for the decode level is 1 to 9, with the default level set to 4.

LIGHT mode (LIGHT)

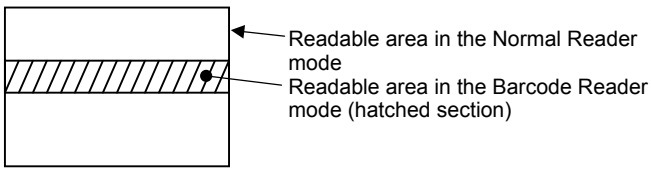
The light mode can be set.
0: AUTO
1: Always ON
2: Always OFF

SCAN MODE

You can select the scan mode from the following:
NORMAL: Normal Reader mode
POINT: Point Scan mode
BARCODE: Barcode Reader mode

Point Scan mode:
Scanning can be performed by aiming at the code on the cross in the center of the marker. If there is no code on the cross, or if unable to detect the marker due to external light and so on, scanning will not be possible. Furthermore, this type of scanning is valid only when the marker light is enabled.
It is not possible to enable Point Scan mode at the same time as Barcode Reader mode. The mode specified last will be valid.

Barcode Reader mode:
When using Barcode Reader mode, the scannable range in the longitudinal direction is restricted to 15% in the center as shown in the diagram below, and the skew angle θ is $0° \leq \theta \leq 6°$.
As a result, the time required to scan barcodes is shorter than that for Normal Reader mode.
However, scanning of 2D codes or multiline barcodes is not possible, even if enabled. Furthermore, it is not possible to enable Barcode Reader mode at the same time as Point Scan mode. The mode specified last will be valid.



MARKER

This setting allows the user to set the laser light marker used to indicate the barcode scanning position.

0: Normal
1: Always
2: None

When set to Normal, the laser light illuminates at the same time as scanning is performed. The Always setting is basically identical to Normal, but the laser light flashes for 30 seconds while waiting for scanning to be performed. When set to None, the laser light does not illuminate.

– Note – When set to Always, the BHT consumes more current and the operating time is shorter when compared to the other two settings. Do not change to this setting unless necessary.

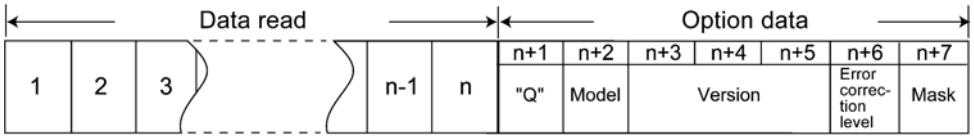
OPTION DATA

When scanning 2D codes, it is possible to append optional data (Option Data) such as the model or error correction level for that 2D code to the end of the scanned data.

– Note – This setting is also valid even when not performing a System mode scan test. Do not change unless necessary.

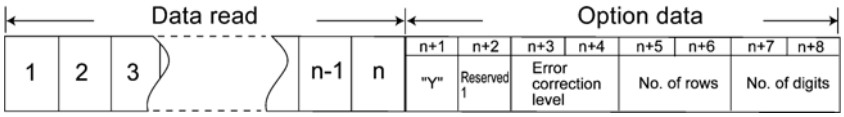
Option data format

・QR code



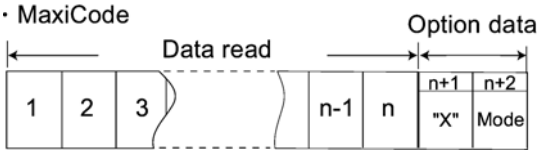
Example: If a code read is "QR code, Model 2, Version 5, Error correction level M, and mask number 6," then the option data below will follow.
(Data read)… Q2V05M6

・PDF417



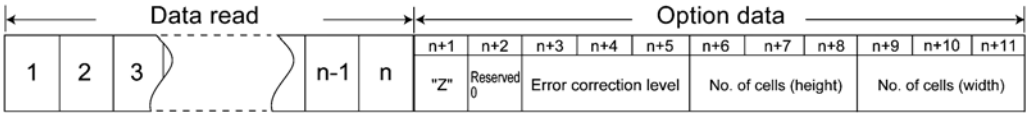
Example: If a code read is "PDF417, Error correction level 4, 12 rows and 2 digits," then the option data below will follow.
(Data read)… Y1041202

・MaxiCode



Example: If a code read is "MaxiCode and Mode 4," then the option data below will follow.
(Data read)… X4

・Data Matrix



Example: If a code read is "Data Matrix, Error correction level ECC200, 10 cells wide by 10 cells high," then the option data below will follow.
(Data read)... Z0200010010

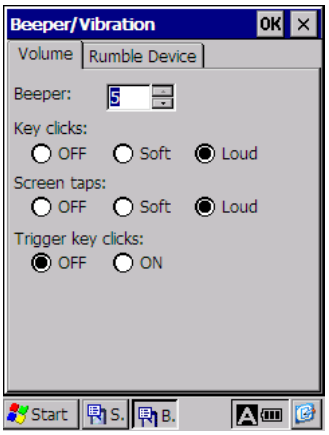
Minimum digits for ITF and CODABAR

The minimum digits can be set for ITF and CODABAR. Depending on how codes are scanned and the code quality and so on, setting a small number of digits increases the risk of missing digits or misreading. Setting a large number of digits, on the other hand, reduces this risk.

The setting range is 2 to 20 for ITF and 3 to 20 for CODABAR, with the default settings being 4, and 4, respectively.

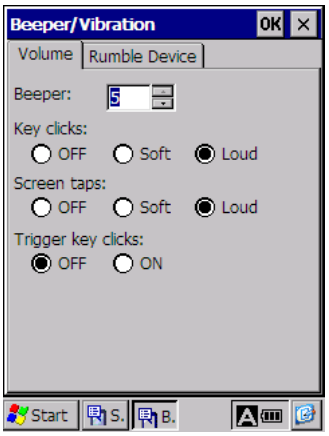
[2] Beeper/Vibration

Double-tap “Beeper/Vibration” at the System Properties screen to display the screen on the right.
This menu is used to adjust the beeper volume and switch between the beeper and vibrator.



◆ Adjusting the Beeper Volume

Sets the beeper volume for each operation.

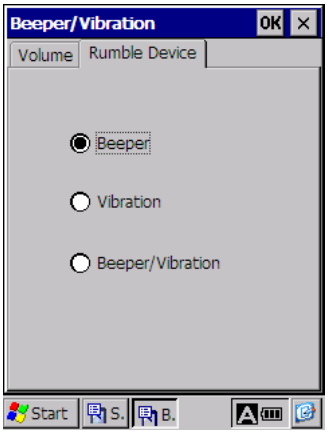


Beeper:	Select the beeper volume from 0 (low) to 5 (high). (Default: 5)
Key clicks:	Select the beeper volume when a key is pressed. (Default: Loud)
Screen taps	Select the beeper volume when screen is tapped. (Default: Loud)
Trigger key clicks*:	Beeper setting when the trigger switch is pressed. (Default: OFF)

* The trigger switch can be assigned to magic keys.

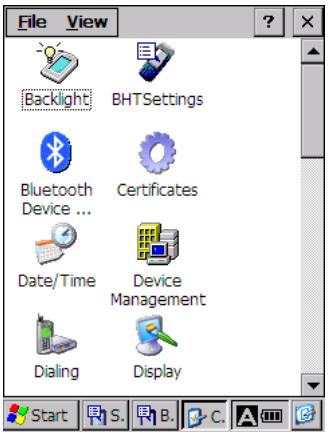
◆ Switching between the Beeper and Vibrator

Select one of the following three patterns for notification of code scanning completion.



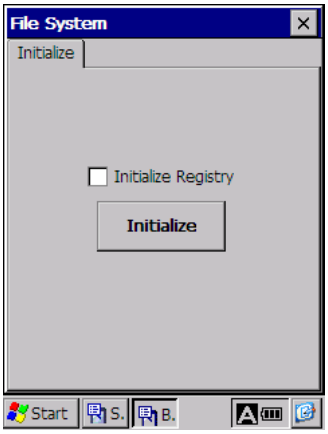
Beeper:	Beeper only (default)
Vibration:	Vibrator only
Beeper/Vibration:	Simultaneous beeper and vibrator

[3] Control Panel



Double-tap “Control Panel” at the System Properties screen to display the screen on the right.
The basic Windows operating environment can be set at the Control Panel.
Refer to “4.2 Start Menu” – “Control Panel” for further details.

[4] File System



Double-tap “File System” at the System Properties screen to display the screen on the right.
The following operations can be performed at this menu.

- Memory initialization (Registry retained.)
- Memory initialization (Registry initialized.)

The table below shows the memory areas initialized by the operations above.

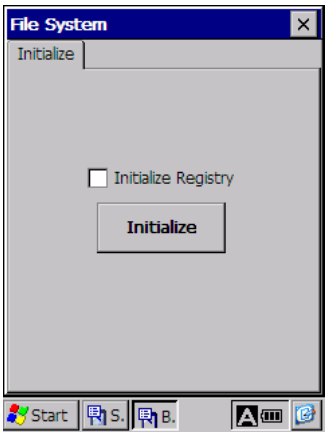
	Memory Initialization (Registry Retained.)	Memory Initialization (Registry Initialized.)
Data stored in the FLASH folder	Not initialized	Not initialized
Data stored in other folders	Initialized	Initialized
Registry	Not initialized	Initialized

◆ Memory Initialization (Registry Retained.)

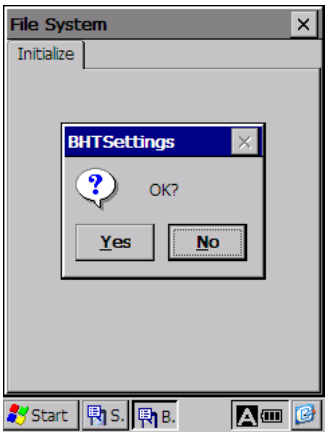
All information is initialized with the exception of Registry information and files in the FLASH folder.

Initialization Procedure

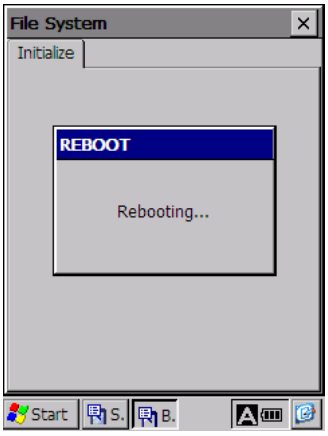
1. Tap the [Initialize] button.



2. To initalize the memory, tap the [Yes] button, and to return to the previous menu, tap the [No] button.



The screen on the right will display for several seconds before the system reboots.

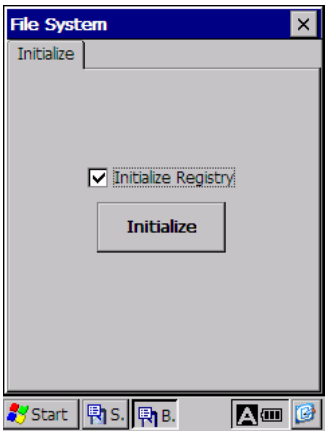


◆ Memory Initialization (Registry Initialized.)

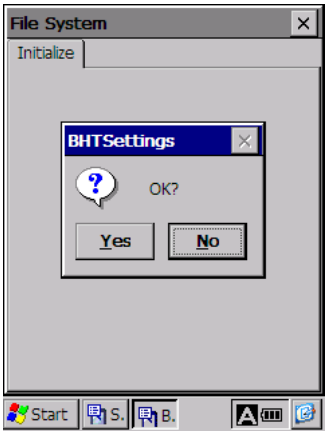
All information, including the Registry, is initialized. However, files in the FLASH folder are not initialized.

Initialization Procedure

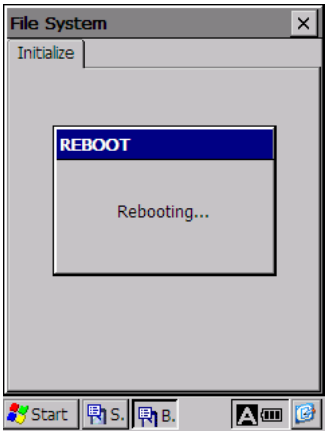
1. Tap the “Initialize Registry” check box to select it.
2. Tap the [Initialize] button.



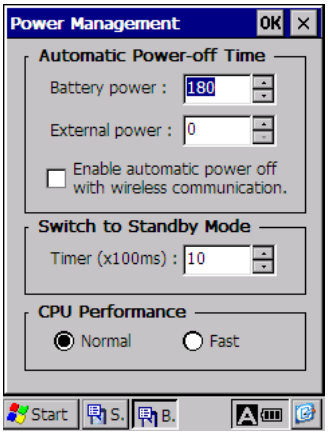
3. To initalize the memory, tap the [Yes] button, and to return to the previous menu, tap the [No] button.



The screen on the right will display for several seconds before the system reboots.



[5] Power Management



Double-tap "Power Management" at the System Properties screen to display the screen on the right.
This menu is used to set the automatic power-off timer, standby timer and CPU clock speed.

Automatic Power off Time:

Battery Power:

Sets the automatic power-off time from 0 to 32767 seconds when the BHT is not on the CU. The power does not automatically turn OFF when set to 0. (Default: 180)

External Power:

Sets the automatic power-off time from 0 to 255 seconds when the BHT is placed on the CU. The power does not automatically turn OFF when set to 0. (Default: 0)

When the "**Enable automatic power off with wireless communication"** check box is selected, the power turns OFF automatically when not performing communication, even if a wireless connection is open.

Switch to Standby Mode:

Timer (x 100 ms):

Sets the waiting time to switch to the standby mode from 0 to 255 in 100ms units.
(10: 100ms x 10 = 1 second)

CPU Performance:

Normal:

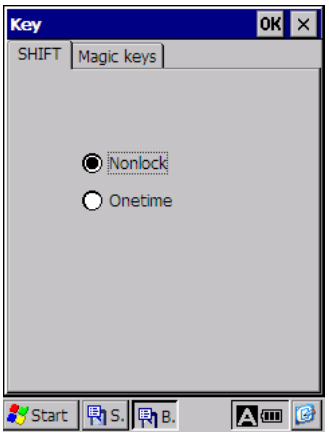
Select to operate the CPU at normal clock speed. (Default)

Fast:

Select to operate the CPU at a higher clock speed.

– Note –
- Setting the CPU performance to Fast consumes much power, reducing the BHT operation period following battery charging.
- The "CPU Performance" setting is valid when the BHT power is next turned ON.

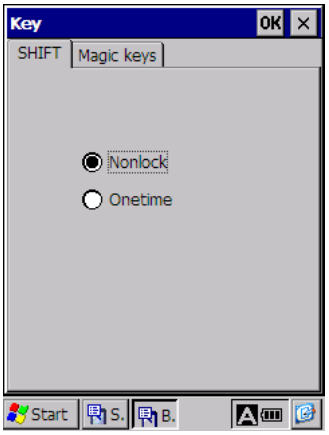
[6] Key



Double-tap “Key” at the System Properties screen to display the screen on the right.
This menu is used to set the following keys.

SF key
M1 key
M2 key
M3 key

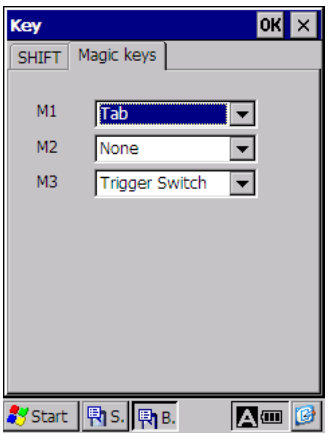
◆ Setting the SF Key



Tap the “SHIFT” tabbed page at the Key settings menu to display the screen on the right.

Nonlock: Enables the keypad shift status only while the **SF** key is held down. (Default)
Onetime: Enables the shift status only for one key after pressing the **SF** key.

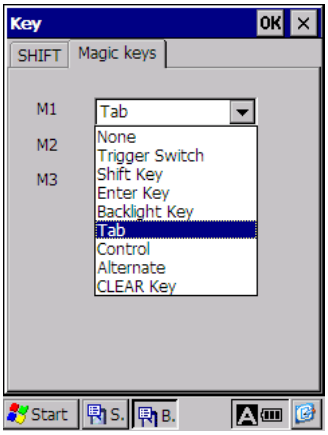
◆ Assigning the M1, M2 and M3 Keys



Tap the “Magic keys” tabbed page at the Key settings menu to display the screen on the right.

This menu is used to assign the trigger switch, **SF** key, **ENT** key, backlight ON/OFF function and **TAB** key and so on (See list below.) to magic keys **M1** to **M3**.

Choice of keys available



The following keys can be assigned to magic keys **M1** to **M3** at the respective combo boxes at the [Magic keys] tabbed pages.

(The example on the right shows the “Tab” key being assigned to **M1** at the [Magic keys] tabbed page.)

None:	Key entry is ignored.
Trigger Switch:	Sets the trigger switch as a magic key.
Shift Key:	Sets the **SF** key as a magic key.
Enter Key:	Sets the **ENT** key as a magic key.
Backlight Key:	Sets the backlight ON/OFF function as a magic key.
Tab:	Sets the **TAB** key as a magic key.
Control:	Sets the **CTRL** key as a magic key.
Alternate:	Sets the **AL** key as a magic key.
CLEAR Key:	Sets the **ESC** key as a magic key.

– Note –

By assigning the **M3** key for the backlight ON/OFF function, this key can be used to turn ON and OFF the backlight.

Note that the backlight ON/OFF function can only be assigned to one of the keys from **M1** to **M3** keys. The most recently assigned key will act as the backlight ON/OFF function, and the previously assigned key will be ignored.

In other words, if the backlight ON/OFF function is assigned to **M1** and then **M2** in this order, the **M2** key will act as the backlight ON/OFF function key, and **M1** key entry will be ignored.

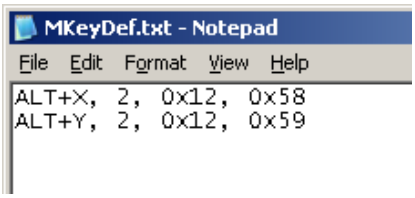
If the backlight ON/OFF function is assigned to none of the keys from **M1** to **M3** keys, the combination of the **SF** and **M3** keys acts as the backlight ON/OFF function by default.

◆ User-defined Code File

User-defined virtual key codes can be assigned to magic keys.

Enter the desired virtual key codes into a text file and save it in the BHT FLASH folder with the filename “MKeyDef.txt”.

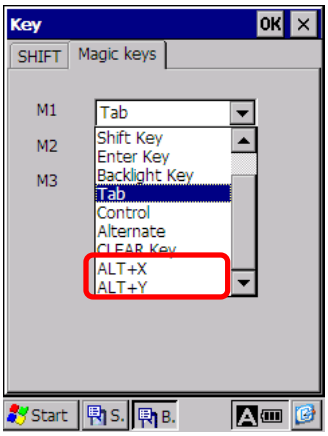
In the example on the right, “ALT+X” and “ALT+Y” is added.



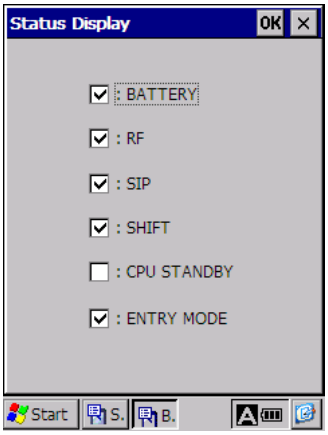
The user-defined code file is read when starting up the Key settings menu.

The defined virtual key codes display after “CLEAR Key” in the order in which they were defined.

Refer to the "BHT-700-CE API Reference Manual" or "BHT-700-CE Class Library Reference Manual" for further details.



[7] Status Display

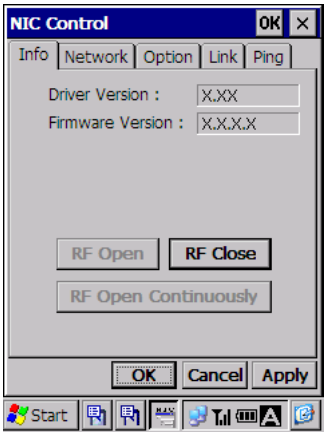


Double-tap “Status Display” at the System Properties screen to display the screen on the right.
This menu can be used to display or hide the following status indicators in the task tray.

BATTERY:	Battery voltage level (Default: Displayed)
RF:	Wireless communication status (Default: Displayed)
SIP:	Software input panel status (Default: Hidden)
SHIFT:	Keypad shift status (Default: Displayed)
CPU STANDBY:	CPU standby status (Default: Hidden)
ENTRY MODE:	Numerical entry mode status (Default: Displayed)

Refer to “Chapter 1 Outline” – “1.2.3 BHT Screen” for further details.

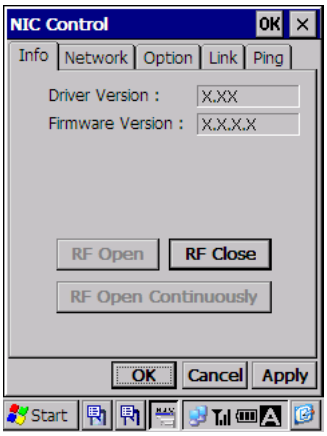
[8] NIC Control



Double-tap “Radio Frequency” at the System Properties screen to display the screen on the right.
This menu can be used to perform the following processes.

- Displaying the wireless module version and opening/closing the wireless device
- Displaying the IP address and MAC address
- Setting the wireless options
- Displaying the current communication status
- Performing a Ping test

◆ Displaying the Wireless Module Version and Opening/Closing the Wireless Device



Tap the “Info” tabbed page at the NIC Control menu to display the screen on the right.
This menu displays the following information.

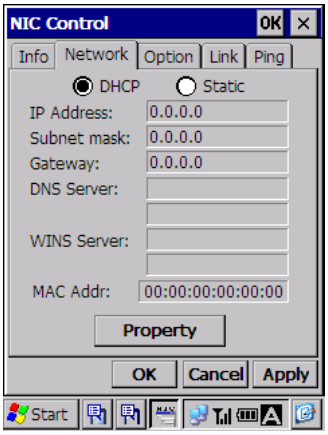
Driver Version:	Wireless driver version
Firmware Version:	Wireless module firmware version

Furthermore, wireless devices can also be opened and closed by tapping the [RF Open], [RF Close] and [RF Close Continuously] buttons.

– Note – If the wireless device is opened by tapping [RF Open], closing the NIC Control menu automatically closes the device. If necessary to display another window while keeping the wireless device open, tap the taskbar of NIC Control to minimize its window.

If the wireless device is opened by tapping [RF Open Continuously], the device remains continuously open even if the NIC Control menu is closed. To close the wireless device, open this menu again and tap the [RF Close] button.

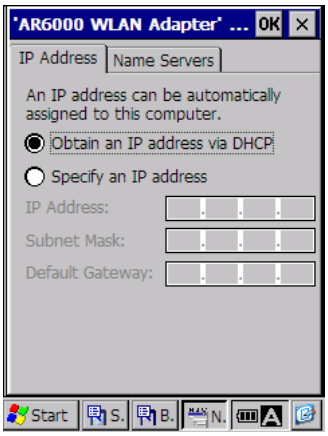
◆ Displaying the IP Address and MAC Address



Tap the “Network” tabbed page at the NIC Control menu to display the screen on the right.
This menu displays the following information.

DHCP/Static:	DHCP usage/not used
IP Address:	BHT IP address
Subnet mask:	Subnet mask
Gateway:	Default gateway
DNS Server:	DNS IP address
WINS Server:	WINS IP address
MAC Addr:	BHT MAC address

– Note – The MAC address displays as "00:00:00:00:00:00" when the wireless device is not opened.

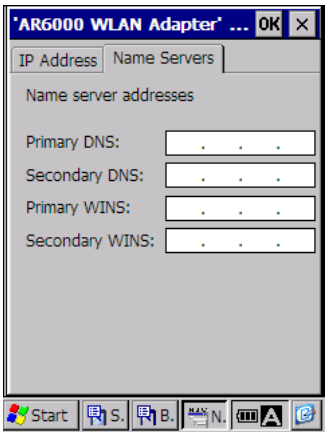


Tap the [Property] to display the screen on the right.
This menu can be used to perform the following processes.

- Setting the IP address
- Setting the name servers

The IP address is set at the “IP Address” tabbed page.

Obtain an IP address via DHCP:
Select this option to automatically obtain a dynamic IP address from the DHCP server.
Specify an IP address:
Select this option to manually enter a static IP address and then enter the address.

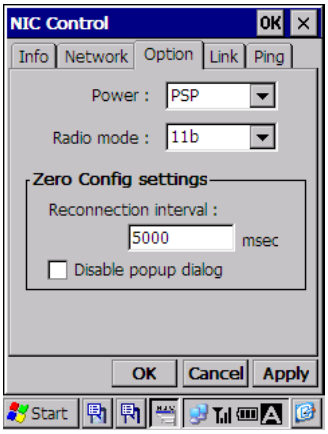


Tap the “Name Servers” tabbed page to display the screen on the right.
Enter IP addresses for the name servers.

Primary DNS:
Enter the IP address for the Primary DNS server.
Secondary DNS:
Enter the IP address for the Secondary DNS server.
Primary WINS:
Enter the IP address for the Primary WINS server.
Secondary WINS:
Enter the IP address for the Secondary WINS server.

– Note – Consult with the network administrator concerning IP addresses.

◆ Setting the Wireless Options



Tap the “Option” tabbed page at the NIC Control menu to display the screen on the right.

Power: Wireless module power save mode setting
- CAM: Always ON
- PSP: Power save mode (Default)

– Note – When using the BHT with PSP mode set, set a low value (2 or 3) for DTIM at the access point. It may not be possible to reconnect to the access point if a larger value is set.

Radio mode: Radio mode setting
- 11b: Enable 802.11b connection
- 11b/g: Enable 802.11b or 802.11g connection
- 11a: Enable 802.11a connection

Reconnection interval:
Sets the time until another attempt is made to connect after failing to connect to all wireless networks.

Disable popup dialog:
The Wireless Zero Configuration screen sometimes pops up when no wireless network connection settings have been made or when connection to all wireless networks has failed. Select this check box to prevent this popup screen displaying.

◆ Displaying the Current Communication Status

Tap the “Link” tabbed page at the NIC Control menu to display the screen on the right, at which the current communication status displays in real time.

Associated Access Point:

Displays the MAC address assigned to the wireless interface of the associated access point.

Signal Strength:

Displays the receipt packet signal intensity.

Link Quality:

Displays the overall communication link quality with the access point.

Display	Communication Status
Excellent	Excellent communication link ↕ Poor communication link
Good	
Fair	
Poor	
Not Associated	Not associated with an access point

Link Speed:

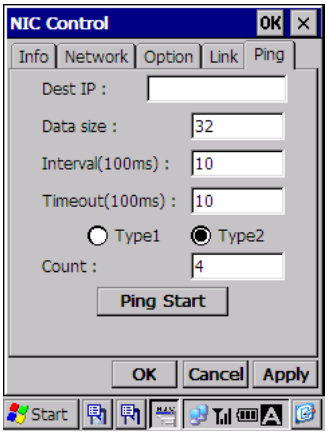
Displays the current transmission speed.

Channel:

Displays the current communication channel.

– Note – Tapping the “Link” tabbed page when the wireless device is not open automatically opens the wireless device and displays the current communication link status.

◆ Performing a Ping test



Tap the “Ping” tabbed page at the NIC Control menu to display the screen on the right.

Dest IP:	Specifies the IP address of the host computer to be pinged.
Data size:	Specifies the data size of the echo request.
Interval:	Specifies the length of echo request intervals (in 100 ms units).
Timeout:	Specifies the timeout period (in 100ms units) for the echo request.
Type1 or Type2:	Specifies the echo request transmission timing (described on next page).
Count:	Specifies the number of echo requests to be sent.

Tap the [Ping Start] button or press the **ENT** key to commence the Ping test.

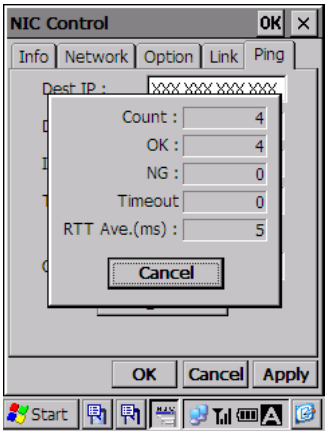
– Note – Tapping the [Ping Start] button when the wireless device is not open automatically opens the wireless device and commences the Ping test.

Setting ranges

Item	Allowable Entry Range	Default Value
Data size	1 to 2048	32
Interval	0 to 65535	10
Timeout	0 to 65535	10
Count	0* to 65535	4

* By setting zero (0), the number of echo requests sent will be infinite (until the Ping test is aborted.)
If a value outside the allowable entry range is specified, the nearest value within the range will automatically be applied.

The screen on the right displays when the Ping test is commenced.



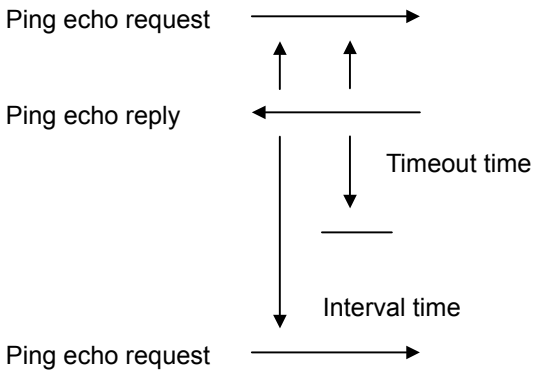
Count:	Number of echo requests sent
OK:	Number of echo replies
NG:	Number of errors that occurred while performing the Ping test
Timeout:	Number of timeouts (for echo requests) that occurred while performing the Ping test
RTT Ave.(ms):	Echo reply time

Ping echo request transmission timing

Two types of echo request transmission timing are available: Type 1 and Type 2. (Default: Type 2)

Type1

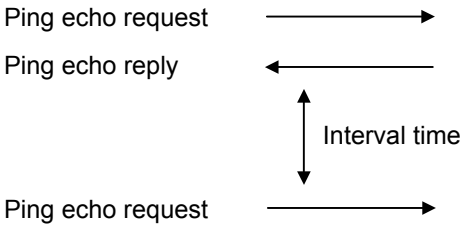
After sending an echo request, the next Ping echo request is sent after the interval time has elapsed. In such a case, set the Interval and Timeout so that “Interval ≥ Timeout”.



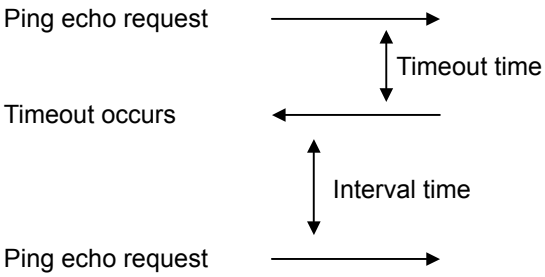
Type2

After sending an echo request, a Ping echo will either be received or a timeout will occur. The next Ping echo request is then sent after the interval time has elapsed. In such a case, there is no correlation between the Interval and Timeout.

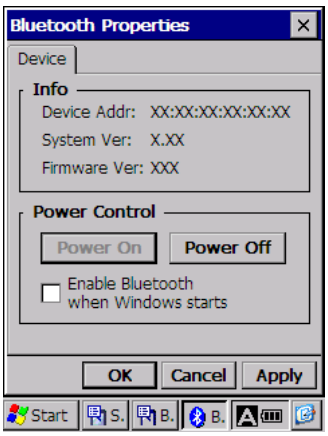
<When Ping echo received>



<When timeout occurs>



[9] Bluetooth® Properties



Double-tap the "Bluetooth", and the Bluetooth® property appears.

Info:

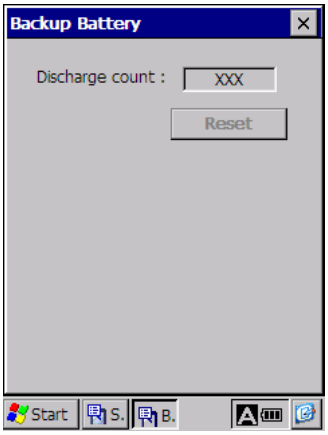
Device Addr: Displaying the MAC address of Bluetooth® module
System Ver: Bluetooth® system version
Firmware Ver: Firmware version of the Bluetooth® module

Power Control:

Power On: Enables Bluetooth® communication.
Power Off: Disables Bluetooth® communication.

When the "**Enable Bluetooth when Windows starts**" check box is selected, Bluetooth® communication will be automatically enabled when Windows CE starts up.

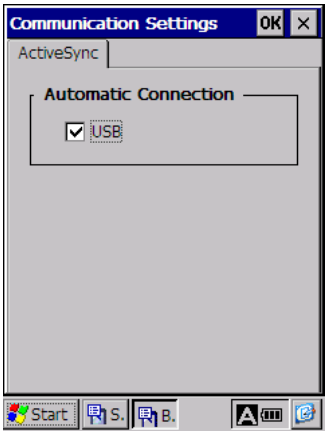
[10] Resetting the Back-up Battery Discharge Count



At the System Properties menu, hold down the **SF** key and press the "0" key to display the screen on the right.
This menu displays the memory back-up battery discharge count. When the back-up battery is replaced, tap the [Reset] button to clear the battery back-up discharge count to zero (0).

– Note – The counter can only be reset after the discharge count reaches 200.

[11] ActiveSync Automatic Connection



At the System Properties menu, hold down the **SF** key and press the "1" key to display the screen on the right.
Select both check boxes and tap the [OK] button to enable ActiveSync automatic connection.

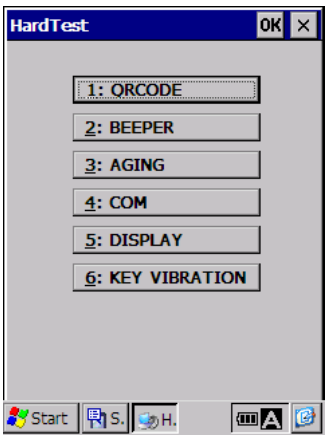
USB:

ActiveSync starts up automatically and a connection with the host computer is established when the USB cable is connected to the BHT with the BHT power ON.

– Note – Automatic connection is disabled by default.

4.4.4 HardTest Menu

Tap “4:Test” at the System Menu to display the screen on the right.

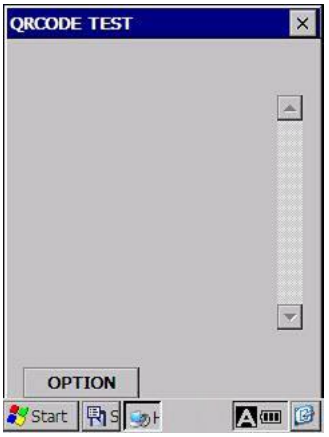


[1] QRCODE:	Performs a code scanning test.
[2] BEEPER:	Performs a beeper scale test.
[3] AGING:	Performs an aging test.
[4] COM:	Performs a communication (IrDA/USB) test.
[5] DISPLAY:	Performs an LCD and indicator LED test.
[6] KEY VIBRATION:	Performs a key entry and vibrator test.

– **Note** – Contact your sales dealer if an error occurs during any of the above tests.

[1] Code Scanning Test

Tap “1:QRCODE” at the HardTest menu to display the screen on the right.
Scan an actual code with the BHT and confirm that the display at the screen matches the code data.



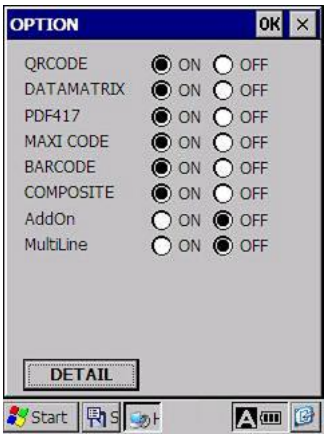
When a code is scanned, the indicator LED illuminates in blue, the beeper sounds once, and the scanned code type, number of digits and data display on the screen.
The relationship between the scanned code type and characters displayed on the screen is shown in the table below.

Code Type	Character
QR Code, MicroQR	Q
PDF417	Y
MaxiCode	X
Data Matrix	Z
EAN • UCC Composite	V
EAN-13, UPC-A	A
EAN-8	B
UPC-E	C
Interleaved 2of5 (ITF)*	I
CODABAR (NW-7)*	N
Code 39	M
Code 93	L
Code 128	K
MSI	P
EAN-128	W
RSS	R

* The minimum number of digits is 3 for STF and CODABAR, and 4 for ITF.

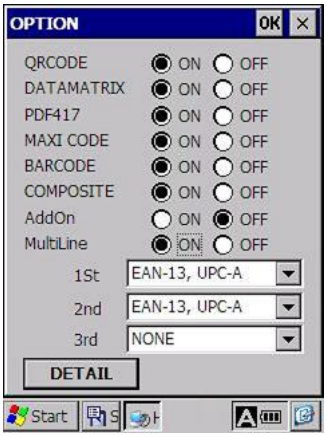
◆ Option

Tap "Option" at the Code scanning test screen to display the screen on the right. Codes for which scanning is permitted or prohibited with the Code scanning test can be set at this screen.



QRCODE:	Sets permission for QR Code scanning.
DATAMATRIX:	Sets permission for Data Matrix scanning.
PDF417:	Sets permission for PDF417 scanning.
MAXI CODE:	Sets permission for Maxi Code scanning.
BARCODE:	Sets permission for Barcode scanning.
COMPOSITE:	Sets permission for Composite scanning.
AddON:	Sets permission for Add-on scanning.
MultiLine:	Sets permission for MulitLine scanning.

When scanning is permitted for MultiLine barcodes, the following settings screen displays.



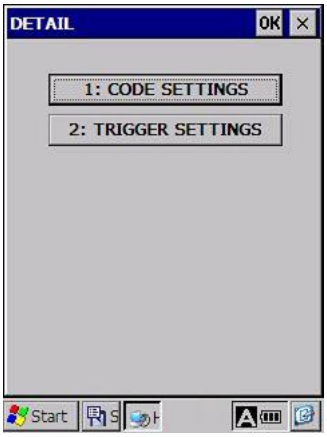
1st:	Set a readable barcode in the 1st row.
2nd:	Set a readable barcode in the 2nd row.
3rd:	Set a readable barcode in the 3rd row.

– Note – It is not possible to simultaneously permit Add-on and MultiLine scan settings. By setting scanning of one of these to be permitted, scanning of the other will automatically be prohibited.

Furthermore, it is not possible to exit Options if scanning of all codes is set to be prohibited.

◆ Detail

Detailed settings and read mode settings can be made for codes for which scanning can be permitted at the Option screen.



[1] CODE SETTINGS:	Performs detailed settings for codes for which scanning can be permitted at the Option screen.
[2] TRIGGER SETTINGS:	Sets the read mode when performing a Code scanning test.

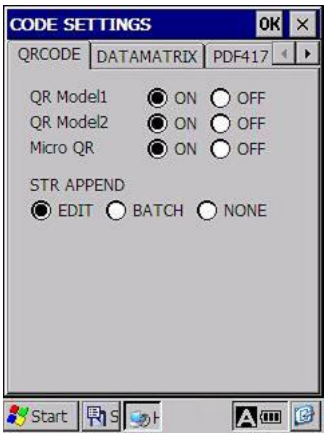
[1] CODE SETTINGS

Tap "1:CODE SETTINGS" at the Detail screen to allow detailed settings to be made for codes for which scanning can be permitted.

QRCODE

QR Model1: Sets permission for QR Model 1 scanning.
QR Model2: Sets permission for QR Model 2 scanning.
MicroQR: Sets permission for Micro QR scanning.

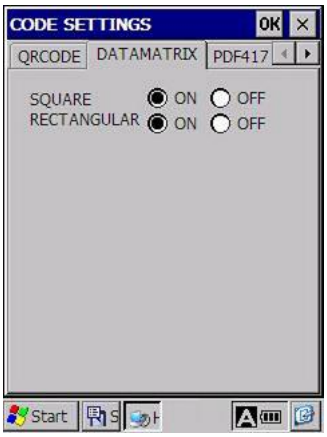
STR APPEND: Sets the Continuous mode for QR Codes.
EDIT: Permits continuous code scanning in Edit mode.
BATCH: Permits continuous code scanning in Batch Edit mode.
NONE: Permits continuous code scanning in Non-edit mode.



– Note – It is not possible to prohibit scanning of QR Model 1, QR Model 2 and Micro QR simultaneously.

DATAMATRIX

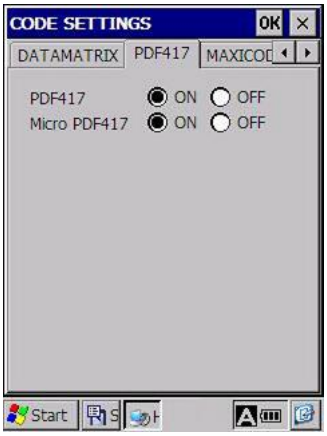
SQUARE: Sets permission for Square Data Matrix scanning.
RECTANGULAR: Sets permission for Rectangular Data Matrix scanning.



– Note – It is not possible to prohibit scanning of both Square and Rectangular Data Matrix simultaneously.

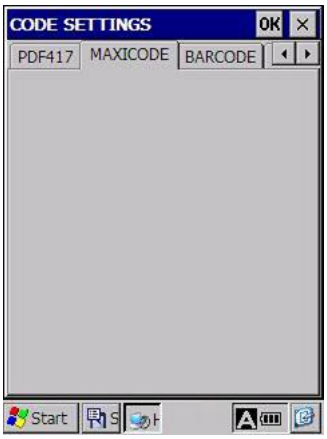
PDF417

PDF417: Sets permission for PDF417 scanning.
Micro PDF417: Sets permission for Micro PDF417 scanning.



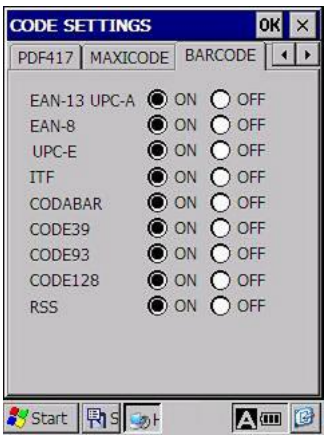
– Note – It is not possible to prohibit scanning of both PDF417 and Micro PDF417 simultaneously.

MAXICODE



– Note – There are no Maxi Code related settings.

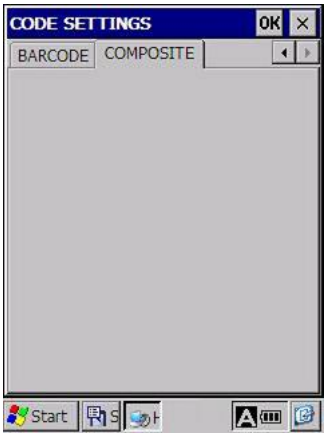
BARCODE



EAN-13 UPC-A: Sets permission for EAN-13 UPC-A scanning.
EAN-8: Sets permission for EAN-8 scanning.
UPC-E: Sets permission for UPC-E scanning.
ITF: Sets permission for ITF scanning.
CODABAR: Sets permission for CODABAR scanning.
CODE39: Sets permission for CODE39 scanning.
CODE93: Sets permission for CODE93 scanning.
CODE128: Sets permission for CODE128 scanning.
RSS: Sets permission for RSS scanning.

– Note – It is not possible to prohibit scanning of all barcodes.

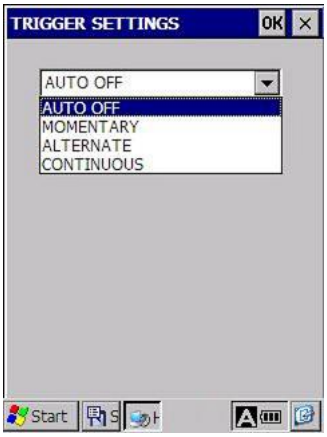
COMPOSITE



– Note – There are no Composite related settings.

[2] TRIGGER SETTINGS

Tap "2:TRIGGER SETTINGS" at the Detail screen to allow the read mode to be set when performing a Code scanning test.



AUTO OFF: Auto-off mode
MOMENTARY: Momentary switching mode
ALTERNATE: Alternate switching mode
CONTINUOUS: Continuous reading mode

Auto-off mode (F):
If you press the trigger switch, the illumination LED comes on. When you release the switch or when the BHT completes barcode reading, then the illumination LED will go off. Holding down the trigger switch lights the illumination LED for a maximum of 5 seconds.
While the illumination LED is on, the BHT can read a barcode until a barcode is read successfully or the barcode devices file becomes closed.
If the illumination LED goes off after 5 seconds from when you press the trigger switch, it is necessary to press the trigger switch again for reading a barcode.
Once a barcode is read successfully, pressing the trigger switch cannot turn on the illumination LED and the BHT cannot read the next barcode as long as the entered barcode data is not read out from the barcode buffer.

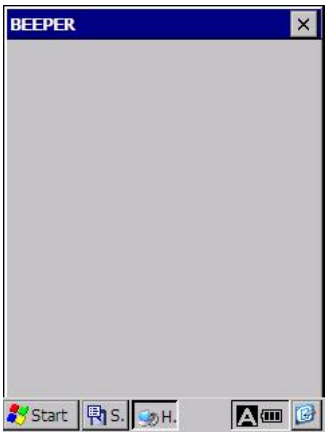
Momentary switching mode (M):
Only when you hold down the trigger switch, the illumination LED lights and the BHT can read a barcode.
Until the entered barcode data is read out from the barcode buffer, pressing the trigger switch cannot turn on the illumination LED so that the BHT cannot read the next barcode.

Alternate switching mode (A):
If you press the trigger switch, the illumination LED comes on. Even if you release the switch, the illumination LED remains on until the barcode device file becomes closed or you press that switch again.
While the illumination LED is on, the BHT can read a barcode.
Pressing the trigger switch toggles the illumination LED on and off.
Once a barcode is read successfully, pressing the trigger switch turns on the illumination LED but the BHT cannot read the next barcode as long as the entered barcode data is not read out from the barcode buffer.

Continuous reading mode (C):
If this mode is specified, the BHT turns on the illumination LED and keeps it on until the barcode device file becomes closed, irrespective of the trigger switch.
While the illumination LED is on, the BHT can read a barcode.
Once a barcode is read successfully, the BHT cannot read the next barcode as long as the entered barcode data is not read out from the barcode buffer.

– Note – Code scanning test settings are valid only while performing code scanning tests.
Settings are initialized when a code scanning test is terminated.

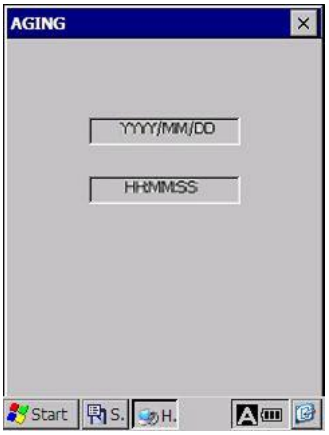
[2] Beeper Scale Test



Tap “2:BEEPER” at the HardTest menu to display the screen on the right and sound the beeper at the two octaves listed below.
The BHT automatically returns to the HardTest menu upon completion of the test.

Scale	Frequency (Hz)		
do	1046	2093	4186
re	1174	2349	–
mi	1318	2637	–
fa	1396	2793	–
sol	1567	3135	–
la	1760	3520	–
ti	1975	3951	–

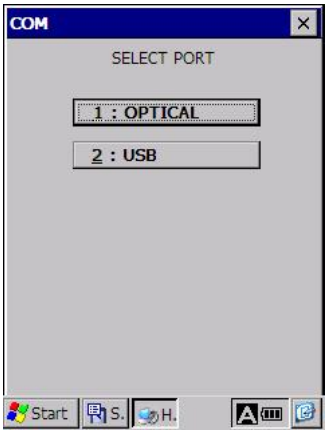
[3] Aging Test



Tap “3:AGING” at the HardTest menu to begin the again test while displaying the current date and time on the screen. (This test is intended for those performing inspection prior to shipping from the factory.)

– Note – The automatic power-off function is disabled once this test is selected.

[4] Communication Test

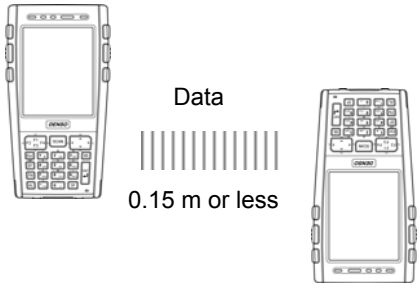


Tap “4:COM” at the HardTest menu to display the COM (communication test) menu.
This menu can be used to test the IrDA and USB interface ports.

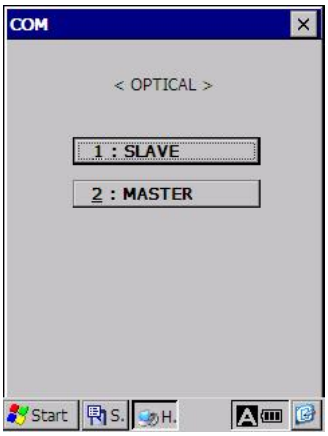
[1] OPTICAL: Displays the SLAVE/MASTER selection screen for the IrDA interface test.
[2] USB: Performs a USB interface test.

◆ IrDA Interface Test

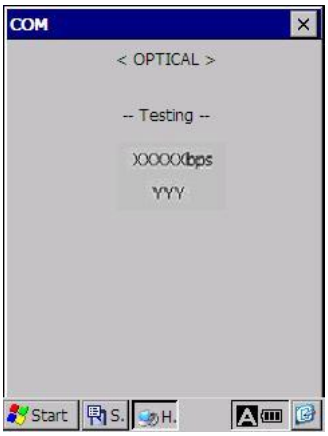
Prepare two BHTs, one as a master station and the other as a slave station (for testing) with their IR ports facing each other as illustrated below. In this test, the slave BHT transmits data to the master BHT and receives the data returned from the master BHT.



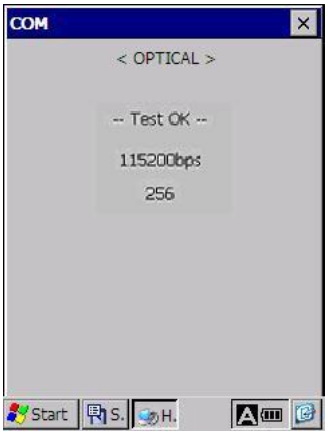
Tap “1:OPTICAL” at the COM menu to display the SLAVE/MASTER selection screen on the right.
Tap “1:SLAVE” at the BHT being tested, and “2:MASTER” at the master BHT.



The screen on the right displays during testing.
XXXXX : Communication speed (2400, 9600, or 115200 bps)
YYY : Transmitted HEX data (0 to 256)



Upon successful test completion, the beeper sounds once and the screen on the right displays at the BHT being tested (slave).
The master BHT automatically returns to the COM menu.



If an error occurs during the IrDA interface test…

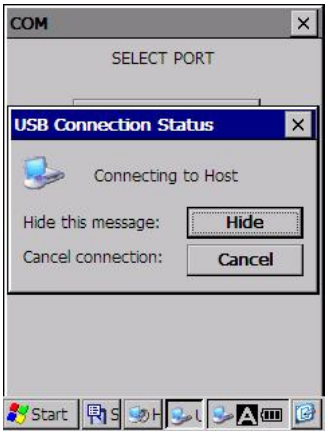
If the test is aborted due to a timeout error, a warning beeper sounds three times and the screen on the right displays at the BHT being tested (slave).
In this example screen, an error occurred at a communication speed of 2400 bps.

If the test is aborted due to a mismatch between the sent and received data, a warning beeper sounds three times and the screen on the right displays at the BHT being tested (slave).
In this example screen, although the data sent at 2400 bps is “17”, the received data is “196”.

◆ USB Interface Test

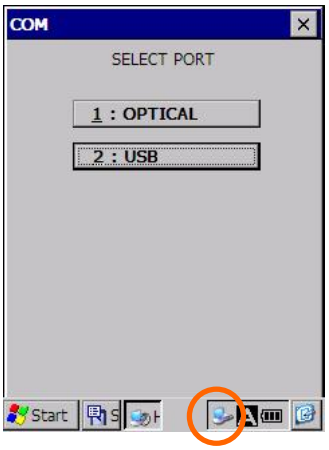
Connect the BHT and host computer with the USB cable.

Tap “2:USB” at the COM menu to display the screen on the right and commence connection to the host computer using ActiveSync.
Refer to “Chapter 5 Communication” – “5.6 ActiveSync” for details of the host computer configuration and ActiveSync.



If ActiveSync connection via the USB interface port is successful…

If ActiveSync connection is successful, the beeper sounds once and the ActiveSync icon displays in the task tray (circled in red on right).



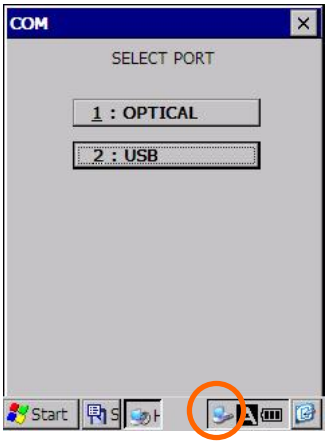
If ActiveSync connection via the USB interface port fails…

If ActiveSync connection fails, the ActiveSync icon does not display.

Terminating the USB interface test

The USB interface can be terminated either by disconnecting the USB cable or by disconnecting the link with the icon in the task tray (as described below).

1. Double-tap the ActiveSync icon displayed in the task tray (circled in red on right).

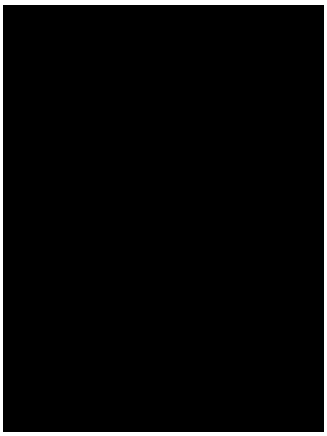


2. Tap the [Disconnect] button displayed on the screen on the right (circled in red).

The ActiveSync link is disconnected. The ActiveSync icon then disappears.

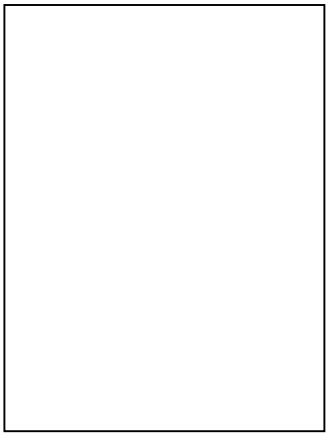
[5] LCD and LED Indicator Test

Tap “5:DISPLAY” at the HardTest menu to display the black test screen on the right and illuminate the indicator in blue.
Press the **ENT** key to proceed to the next test pattern.
Press the **BS** key to return to the previous test pattern.



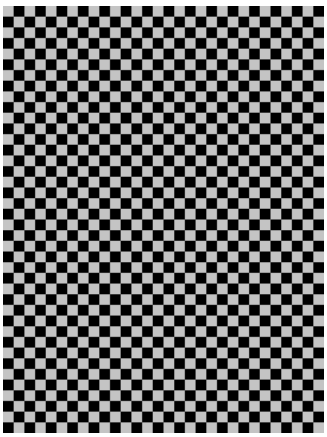
BS key ⇑ ⇓ **ENT** key

As shown on the right, the screen turns blank and the indicator LED turns red.



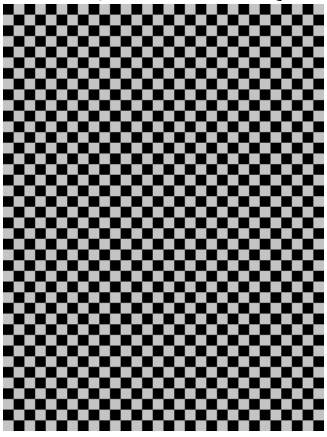
BS key ⇑ ⇓ **ENT** key

As shown on the right, a checked pattern displays and the indicator LED turns OFF.



BS key ⇑ ⇓ **ENT** key

The checked pattern is reversed.

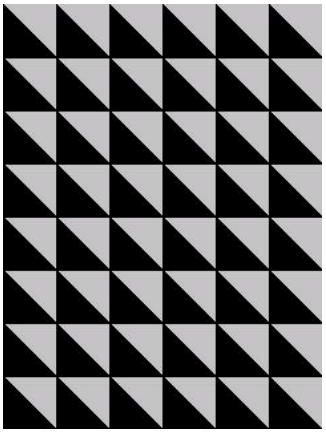


BS key ⇑ ⇓ **ENT** key

A gray screen displays with a one-dot wide white outline.

BS key ⇑ ⇓ **ENT** key

Forty eight right-angled triangles display.

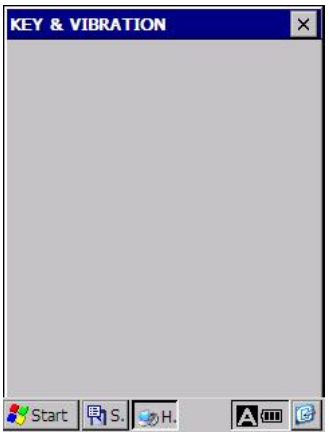


BS key ⇑ ⇓ **ENT** key

A gradation pattern displays filling the entire screen.

Press the **ENT** key to return to the HardTest menu.

[6] Key Entry and Vibrator Test



Tap “6:KEY VIBRATION” at the HardTest menu to display the screen on the right awaiting key entry.
Press individual keys to display characters at pre-assigned positions on the screen.

The relationship between the keys and displayed characters is shown in the table below.

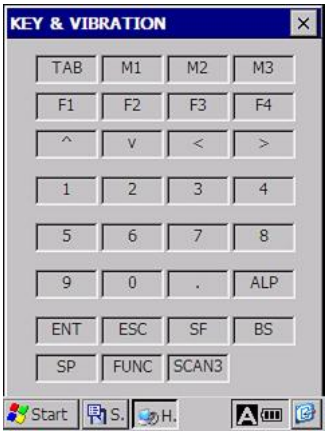
27-Keypad

Key	Character	Key	Character	Key	Character
TAB	TAB	1	1	AL	ALP
M1*	M1	2	2	ENT	ENT
M2*	M2	3	3	ESC	ESC
M3	M3	4	4	SF	SF
F1	F1	5	5	BS	BS
F2	F2	6	6	SP	SP
F3	F3	7	7	FN	FUNC
F4	F4	8	8	SCAN**	SCANX
^	^	9	9		
v	v	0	0		
>	>	.	.		
<	<				

* The vibrator only works when the **M1** or **M2** key is pressed.

** Pressing the right or left trigger switch has the same function as pressing the SCAN key. Whenever one of these keys is pressed, the display changes from SCAN1 to SCAN2 to SCAN3. Please note that the display will also change by pressing the same key continuously, and therefore this should be avoided.

After all keys have been pressed and their corresponding characters displayed on the screen, the test is exited automatically and the screen returns to the HardTest menu.



42-Keypad

Key	Character	Key	Character	Key	Character
TAB	TAB	A	A	S	S
M1*	M1	B	B	T	T
M2*	M2	C	C	U	U
M3	M3	D	D	V	V
F1	F1	E	E	W	W
F2	F2	F	F	X	X
F3	F3	G	G	Y	Y
F4	F4	H	H	Z	Z
^	^	I	I		
v	v	J	J	NUM	NUM
<	<	K	K	ENT	ENT
>	>	L	L	ESC	ESC
		M	M	SF	SF
		N	N	BS	BS
		O	O	SP	SP
		P	P	FN	FUNC
		Q	Q	SCAN**	SCANX
		R	R		

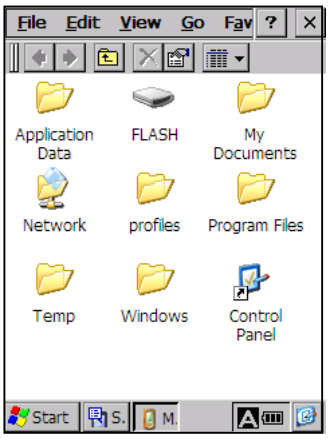
* The vibrator only works when the **M1** or **M2** key is pressed.

** Pressing the right or left trigger switch has the same function as pressing the SCAN key. Whenever one of these keys is pressed, the display changes from SCAN1 to SCAN2 to SCAN3. Please note that the display will also change by pressing the same key continuously, and therefore this should be avoided.

After all keys have been pressed and their corresponding characters displayed on the screen, the test is exited automatically and the screen returns to the HardTest menu.

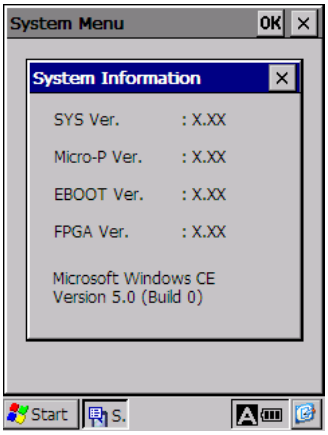
4.4.5 Explorer

Tap “5:Explorer” at the System Menu to display the screen on the right.

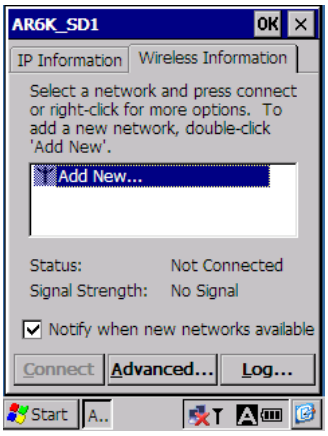


4.4.6 System Information

Tap “6:Version” at the System Menu to display the screen on the right.



4.5 Wireless Network Settings



The BHT-700QWB-CE/700QWBG-CE is equipped with an internal wireless module. The screen on the right displays when booting up the BHT for the first time or when wireless network environment settings have not been made.
If this screen does not display, it can be displayed by double-tapping the Wireless Zero Configuration status icon in the task tray.

This menu can be used to perform the following processes.

- Displaying network information such as the IP address
- Performing wireless network settings

The icons displayed in the task tray are described below.

Wireless network connection status:

: The BHT is connected to a wireless network.

: The BHT is not connected to a wireless network.

Wireless device open status and radio field intensity:

Indicates the wireless device open status and radio field intensity.

: Displays when the wireless device is open.

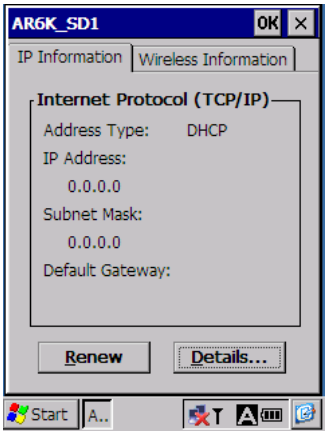
: Radio field intensity (weak)

: Radio field intensity (fairly strong)

: Radio field intensity (strong)

– **Note** – The radio field intensity icons indicate that a link has been established with the access point, but does not necessarily guarantee that wireless communication will be possible.

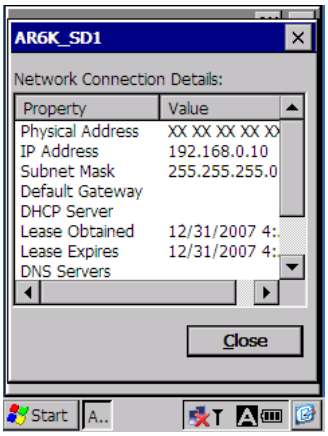
◆ IP Information



Tap the “IP Information” tabbed page at the wireless network settings menu to display the screen on the right.
This menu displays network settings information such as the current IP address.

When the IP address is set to be obtained from the DHCP server, tap the [Renew] button to reacquire the IP address.

When the IP address is set to be specified by the user, information is not updated even when the [Renew] button is tapped.



Tap the [Details…] button to display the screen on the right.
This screen displays detailed network settings information.

<u>Network Connection Details:</u>

Physical Address:
Displays the MAC address for the BHT internal wireless module.

IP Address:
Displays the current IP address.

Subnet Mask:
Displays the current subnet mask address.

Default Gateway:
Displays the current default gateway address.

DHCP Server:
Displays the DHCP server address.

Lease Obtained:
Displays the time and date at which the IP address was obtained from the DHCP server.

Lease Expires:
Displays the time and date at which the IP address becomes invalid.

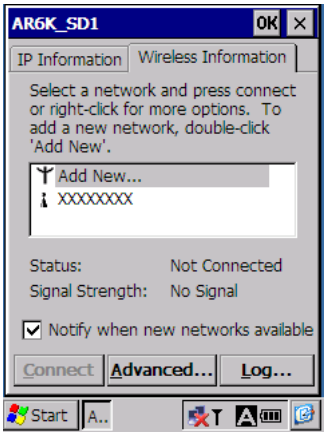
DNS Server:
Displays the DNS servers address.

WINS Server:
Displays the WINS servers address.

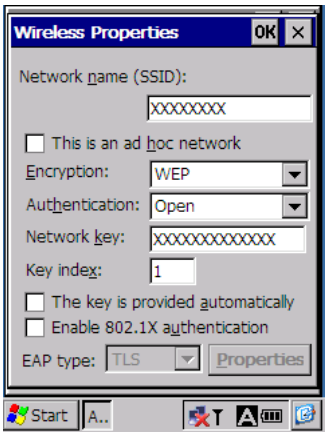
Refer to “4.4.3 System Properties” for details of the setting method for the IP address and so on.

◆ Wireless Information

Wireless Properties



Tap the “Wireless Information” tabbed page at the wireless network settings menu to display the screen on the right.
The SSID list for which a search was performed automatically by the BHT displays.
If the SSID is not automatically recognized, double-tap “Add New…” and manually enter the SSID.
Tap the SSID for which a connection is to be made from the SSID list, and then tap the [**Connect**] button to begin connecting to the wireless network.
When there are no settings for connection to the selected wireless network, the settings screen described in the following section displays.



Double-tap an SSID from the SSID list to display the screen on the right. Settings required to connect to the wireless network are made at this screen.

Network name (SSID):
Enter the SSID. Manually enter the SSID if it is not automatically recognized.

This is an ad hoc network:
Do not select this check box because ad hoc mode is not supported.

Encryption:
Select the encryption method.

Authentication:
Select the authentication method when the encryption method is selected.

Network key:
Enter the WEP Key when the encryption method is WEP.
Enter the Pre Shared Key when the authentication method is WPA-PSK.

Key index:
Enter the network key index (1 to 4).

This key is provided automatically:
Select this check box to automatically obtain the network key.

Enable 802.1X authentication:
Select this check box to enable IEEE 802.1X authentication.

EAP type:
Select the “Enable 802.1X authentication” check box to enable selection.
Refer to “Authentication Settings” on the following page for further details.

Security and Setting Method

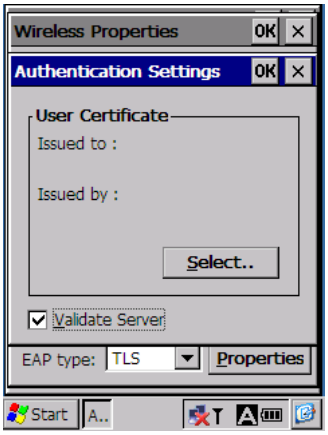
The security level can be changed based on the encryption and authentication combination. The setting parameters for each security level are shown in the table below.

Parameter	Security									
	None		PEAP (802.1x)	EAP-TLS (802.1x)	PEAP (WPA)	EAP-TLS (WPA)	PSK (WPA)	PEAP (WPA2)	EAP-TLS (WPA2)	PSK (WPA2)
Encryption	Disabled	WEP	WEP	WEP	TKIP	TKIP	TKIP	AES	AES	AES
Authentication	–	Open	Open	Open	WPA	WPA	WPA -PSK	WPA2	WPA2	WPA2-PSK
Network key	–	xxxxxx	–	–	–	–	xxxxxx	–	–	xxxxxx
Key index	–	1 to 4	–	–	–	–	–	–	–	–
The key is provided automatically	–	*	√	√	–	–	–	–	–	–
Enable 802.1X authentication	–	*	√	√	–	–	–	–	–	–
EAP type	–	–	PEAP	TLS	PEAP	TLS	Ignored	PEAP	TLS	Ignored

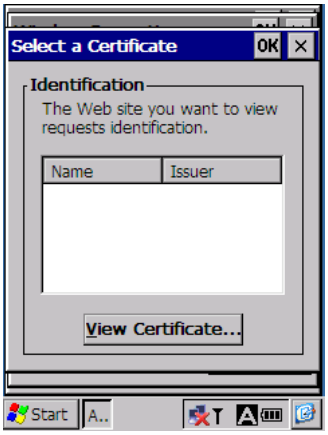
– : No entry possible
√ : Select
* : No entry or no selection
xxxxxx : Enter the network key.

Authentication Settings

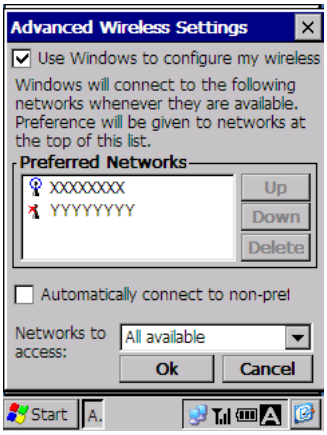
The [Properties] button is enabled when PEAP or TLS is selected for the “EAP type”.
Tap the [Properties] button to display the screen on the right showing the “User Certificate” issuance information.
Select the “Validate Server” check box to enable the certificate server.
The server is enabled by default.



The [Select..] button is enabled when TLS is selected for the “EAP type”.
Tap the [Select..] button to display the screen on the right showing the certificate list.
Select a certificate from the list and tap the [View Certificate…] button to display detailed information.



Advanced Wireless Settings



Tap the [Advanced…] button at the "Wireless Information" tabbed page to display the screen on the right.

Use Windows to configure my wireless settings:

This check box should normally be selected.

Preferred Networks:

Displays a list of wireless networks for which connection is set.

Connection is attempted starting from the wireless network displayed at the top.

Select a wireless network and tap the [Up] or [Down] button to change the order in which the selection displays in the list.

Select a wireless network and tap the [Delete] button to delete the selected wireless network from the list.

Automatically connect to non-preferred networks:

Select this check box to also attempt a connection to wireless networks for which connection has not been set.

Networks to access:

Used to select accessible networks.

All available:

Access is possible for both access points and other network devices.

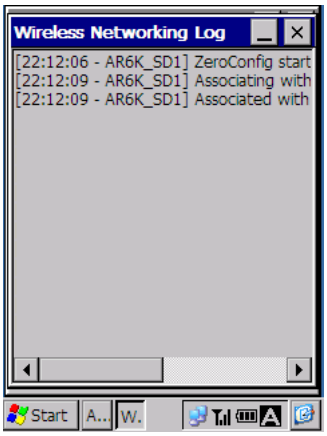
Only access points:

Access is possible only between the BHT and access point.

Only computer-to-computer:

Access is possible only between the BHT and other network devices.

Wireless Networking Log



Tap the [Log…] button at the "Wireless Information" tabbed page to display the screen on the right.

The communication log for the wireless network displays.

Chapter 5
Communication

This chapter describes technical information on BHT connector communication, infrared communication, Bluetooth® Communication and wireless communication, and provides details of Microsoft ActiveSync.

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5.1 Connector Communication

The BHT-700QWB-CE/700QWBG-CE is equipped with a connector interface used to communicate with other devices.
Use the CU-733 or CU-714 to perform communication.

5.2 Infrared Communication

The BHT has a built-in infrared (IR) communication device that enables wireless transfer of programs and data both between the BHT and the host computer and between BHTs without the need for a cable.
Infrared communication offers the following benefits over other forms of communication.

- Communication without the need for a cable
- High communication speed
- Freedom from regulations and licenses that differ from country to country when using wireless devices

Communication is performed by arranging the BHT and other IrDA-compliant devices with their IrDA (infrared) interface ports facing one another. The communication distance and angle and so on will differ depending on the devices used. Refer to the instructions given in the manuals provided with such equipment.

– Point – When communication is not possible, move the respective devices closer together or change the angle of the IrDA interface ports and try again.

The BHT's infrared communication device is IrDA-compliant. IrDA stands for Infrared Data Association, which has defined hardware (IrDA Serial Infrared Physical Layer Link) and communication protocols for infrared communication. The BHT's physical layer complies with IrDA1.2, with a maximum transfer distance of 0.15 m and maximum communication speed of 115.2 kbps.

5.3 Bluetooth® Communication

5.3.1 Notes for Bluetooth® Operations

The BHT supports Bluetooth® wireless data transmission.

- If there are too many communications errors, first make sure that the BHT points directly at other Bluetooth®-enabled devices because the 2.4 GHz band requires a more or less straight line path.
  Note also that the low-power radio waves have trouble passing through human bodies and other obstacles along that path.
- In the vicinity of wireless LAN devices using radio waves in the 2.4 GHz band, Bluetooth® link operation may cause interference to radio communications, resulting in decreased communications speed or communications failures.
- The Bluetooth® link will not operate properly in the vicinity of microwave ovens, industrial heaters, high-frequency medical equipment, and other sources of radio waves in the 2.4 GHz band.
- Electromagnetic noise from personal computers, refrigerators, and other home appliances can also interfere with link operation.
- Environmental factors that can also interfere with link operation include large metallic objects, metallic dust, or metallic walls in the vicinity of the path and vibration at either end.

– Point – **Requests to System Designers**

- Before developing the application, make sure that the intended environment is free of the interference factors above and thus actually capable of supporting link operation.
- Assume that there will be communications failures requiring robust retry capabilities in the software.
- When introducing the BHT link operation into an environment where equipment using radio waves in the 2.4 GHz band operates or when introducing such equipment after the introduction of the BHT link operation, be sure to confirm that the BHT radio link operates properly with all equipment being in operation beforehand.
- If the environment of the radio communications system is changed after the introduction (e.g., newly installed household appliances and movement/addition of shelves or objects), then confirm that the radio link operates properly again before the actual use.

5.3.2 Specifying Parameters

◆ Bluetooth® device address

Remote devices return these addresses, uniquely assigned to each Bluetooth® device by the Bluetooth® SIG, during device detection.

◆ Bluetooth® device name

Bluetooth® devices can distinguish themselves using user-friendly names--Robert or Sandra, for example.

◆ Bluetooth® passkey (Bluetooth® PIN)

Pairs of Bluetooth® devices use these encryption keys for mutual authentication and for establishing secure links between themselves.

◆ Security Modes

This BHT supports the following three security modes.

(1) No security: There is no security authentication.
(2) Service level security: There is security authentication.
(3) Link level security: There is security authentication using point-to-point encryption keys.

Specifying No security sometimes prevents connecting to remote devices using service or link level security--unless both ends use the same Bluetooth® passkey.
Service or link level security requires that both ends use the same Bluetooth® passkey.

5.4 Wireless Communication

The BHT-700QWB-CE/700QWBG-CE is equipped with a 2.4/5 GHz waveband wireless module.

5.4.1 Usage Precautions

- It may be possible to avoid the easy occurrence of communication errors by pointing the right side of the BHT (equipped with built-in antenna) toward the access point. This is because the radio waves of the 2.4/5 GHz waveband on which the BHT operates are emitted straight ahead and do not easily pass through the human body and so on.
- Communication may not be possible when used in the vicinity of wireless devices, microwave ovens, industrial heating equipment or high-frequency medical equipment operating on the same 2.4/5 GHz waveband as the BHT.
- Communication may not be possible due to electromagnetic noise when the BHT is used in the vicinity of household appliances such as computers or refrigerators.
- Communication may not be possible in the following locations.
  - In the vicinity of metal objects or in places with high levels of metallic dust
  - Rooms surrounded by metal walls
  - Places subject to strong impact

– Point – **Requests to System Designers**

- Communication may not be possible depending on the environment in which the device is being used. Ensure that problem-free communication is possible prior to use.
- Use a program capable of retransmitting data if communication fails.
- If the BHT is introduced into an environment in which a device using 2.4/5 GHz waveband electromagnetic waves is operating, or if another device using 2.4/5 GHz waveband electromagnetic waves is introduced following introduction of the system, run all devices and ensure that communication with the BHT is possible prior to use.
- Check communication once again prior to use if any changes are made to the usage environment (addition of household appliances, movement or addition of shelves, equipment and so on) following introduction of the system.

– Point – **Wireless LAN Interference**

In addition to industrial, scientific, and medical equipment such as microwave ovens, static wireless stations (permit required) used for mobile identification in places such as plant manufacturing lines, amateur wireless stations, and specified low-power wireless stations (no permit required) operate on the same frequency band as this device.

1. Before using this device, ensure that no static wireless stations or specified low-power wireless stations for mobile identification are being used in the vicinity.
2. In the event of instances of electromagnetic interference from this device to a static wireless station being used for mobile identification, either promptly alter the usage frequency, or halt the electromagnetic discharge.
3. If other problems arise due to reasons such as electromagnetic interference from this device to a specified low-power wireless station being used for mobile identification, please contact DENSO WAVE through QBdirect (see page ii).

5.5 Basic Communication Specifications and Ymodem Communication

5.5.1 Basic Communication Specifications

The table below lists communication specifications when the BHT exchanges data with the host computer using the IrDA interface or connector interface.

	IrDA Interface	Connector Interface
Synchronization	Start-stop	
Transmission speed	9600, 19200, 38400, 57600, 115200 bps	300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps
Transmission code	ASCII 8-bit code	ASCII 7-bit or 8-bit code
Transmission bit order	LSB (Least significant bit) first	
Vertical parity	None	Even, odd, or none

◆ Synchronization

For accurate data transaction, it is necessary to synchronize transmission between the sender and receiver. To achieve this, the bit order and position, character length, and beginning and end of the character to be transmitted must be defined beforehand.

Start-stop synchronization is an asynchronous system that synchronizes each character as a unit; that is, it externally adds start and stop bits to the leading and trailing bit positions of the character to be transmitted, respectively. Data sampling is commenced upon receiving the start bit, and when the stop bit is received, sampling is completed and communication ceased. The number of stop bits can be selected (1 or 2 bits).

◆ Transmission Speed

This is the maximum number of bits that can be transmitted per second, and is expressed in bps (bits per second).

◆ IrDA Interface Communication Range

The maximum effective range of the IrDA interface is 15 cm, with the IR beam within a 10° angle of divergence.

◆ IrDA Interface Transmission/Receipt Switching Time

The IrDA interface must satisfy the following conditions for transmission and receipt switching.

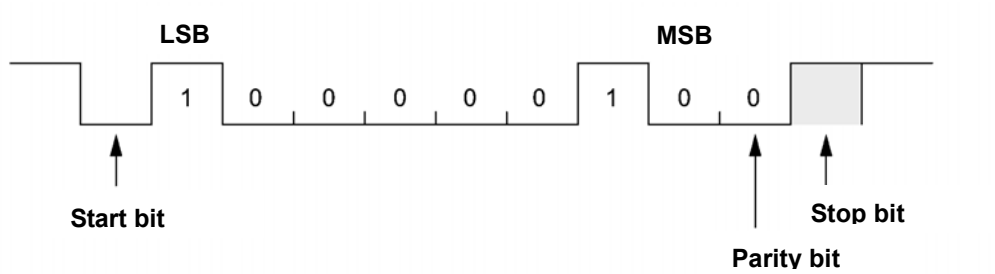
(1) The IrDA interface must be ready to receive within 10 ms following the completion of transmission.

(2) The IrDA interface must commence transmission after waiting at least 10 ms following the completion of receipt.

◆ Transmission Code and Bit Order

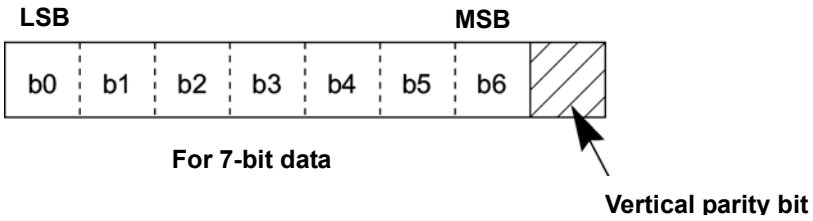
- All characters should be coded to 7 or 8-bit code for data transmission.
- The standard code at the BHT is ASCII 7-bit or 8-bit code.
- The transmission bit order is LSB (Least significant bit) first.

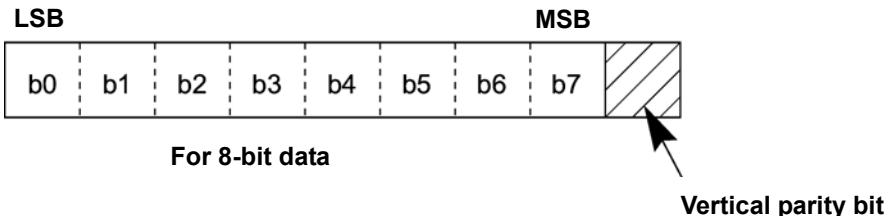
The example below is for the transmission of an ASCII 8-bit code A (41h or 01000001b, b: binary) with even vertical parity and a single bit each for the start and stop bits.



◆ Vertical Parity

A vertical parity bit is a redundant bit that is added to every character transmitted in order to check that data has been transmitted accurately. The parity bit should be set to either "1" or "0" depending upon the parity parameter setting to make the number of set bits in the character even or odd. The receiver counts the number of set bits in the transmitted character code to make sure that it has the specified number (even or odd) of set bits.
The vertical parity bit is positioned immediately after the MSB (Most significant bit) as shown below.





5.5.2 Ymodem Communication

At the System Menu and in user programs, the BHT can perform Ymodem communication with the following communication parameters.

Port	IrDA Interface	Connector Interface
Transmission speed	9600, 19200, 38400, 57600, 115200 bps	300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps
Character length	8 bits	8 bits
Vertical parity	None	Even, odd, or none
Stop bit length	1 bit	1 or 2 bits

◆ System Menu

Refer to “Chapter 4 System Operation” – “4.4.3 System Properties”.

◆ User Programs

Refer to the "BHT-700-CE API Reference Manual" or "BHT-700-CE Class Library Reference Manual."

5.6 ActiveSync

ActiveSync allows the BHT to connect to the host computer and perform the following operations.

- Data synchronization
- Data back-up
- Data copy or transfer
- User program debugging

Any of the following four methods can be used to connect the BHT and host computer.

- IrDA communication
- Connector communication (USB)
- Wireless communication
- CU-714 communication

5.6.1 ActiveSync 4.5 Installation

A host computer with IrDA interface port or USB interface port is required to install ActiveSync 4.5.

– **Point** –
- Connection with ActiveSync is not possible when using the CU-733 with RS-232C interface.
  It is necessary to perform communication with the BHT and host computer IrDA interface ports facing one another.
- With ActiveSync 4.X, ActiveSync by wireless communication or CU-714 communication is not possible. Use ActiveSync 3.8 or earlier version.

When establishing a connection between the BHT and host computer using ActiveSync, install ActiveSync 4.5 on the host computer.

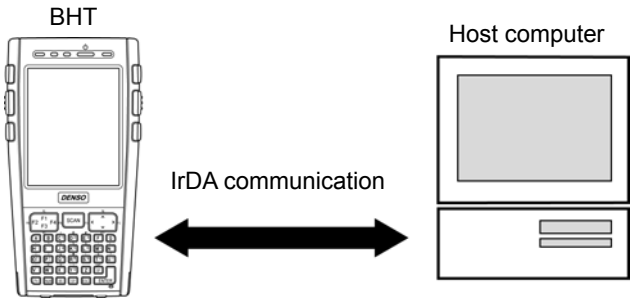
ActiveSync 4.5 can be downloaded free of charge from the following Microsoft Web site.

http://www.microsoft.com/downloads/details.aspx?displaylang=en&FamilyID=9e641c34-6f7f-404d-a04b-dc09f8141141

5.6.2 Connecting with ActiveSync

◆ IrDA Communication

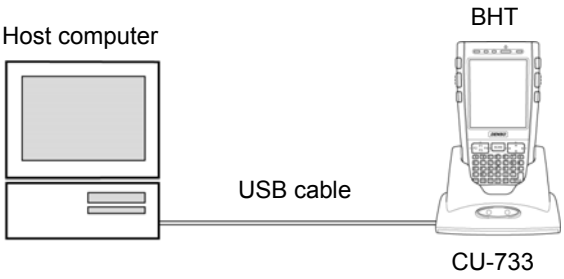
Arrange the BHT and host computer with their IrDA interface ports facing one another as shown below.



Refer to “Chapter 4 System Operation” – “4.4.2 Communication Menu” for details of how to run ActiveSync at the BHT.

◆ Connector Communication

Connect the host computer USB interface port to the BHT connector interface port with a CU-733.



Refer to “Chapter 4 System Operation” – “4.4.2 Communication Menu” for details of how to run ActiveSync at the BHT.

◆ Wireless Communication

When running ActiveSync using wireless communication, it is first necessary to establish a partnership between the BHT and host computer.

If no partnership exists, set up the partnership with the host computer by following the instructions given on the next page.

If a partnership exists, an ActiveSync connection using wireless communication can be established by following the instructions given in “Chapter 4 System Operation” – “4.4.2 Communication Menu”.

– Point – Depending on the computer name of the host computer, it may not be possible to run ActiveSync using wireless communication (e.g., when the computer name begins with a numerical character.)

It is recommended that the name of the host computer be made up entirely of alphabet characters (A to Z, a to z.)

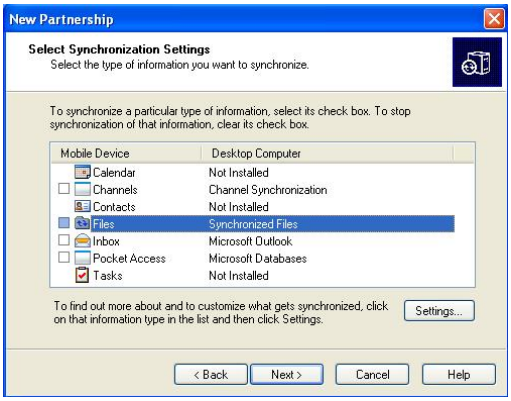
5.6.3 Setting Up a Partnership

1. The screen on the right displays at the host computer once a connection has been established with the BHT.

New Partnership
Set Up a Partnership
Before you can synchronize information between your mobile device and this computer, you must set up a partnership between them.
Would you like to set up a partnership?
Yes
Set up a partnership so that I can synchronize information between my device and this computer.
No
I don't want to synchronize information. Set up my device as a guest so that I can copy or move information between my device and this computer.
< Back
Next >
Cancel
Help

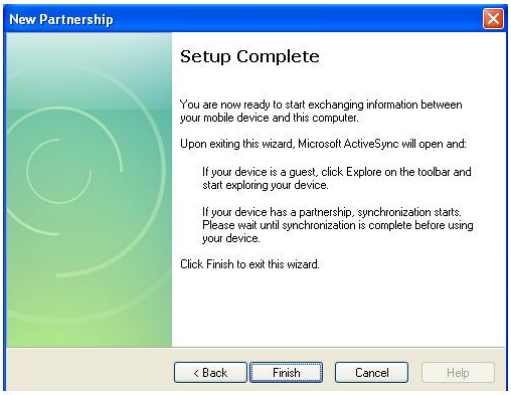
Set up the partnership between the host computer and BHT.
Select the “Yes” option and click the [Next >] button.

2. The screen on the right displays.



To synchronize files, select the “Files” check box and click the [Next >] button.

3. Click the [Finish] button to complete the setup and return to Windows.


New Partnership
Setup Complete
You are now ready to start exchanging information between your mobile device and this computer.
Upon exiting this wizard, Microsoft ActiveSync will open and:
If your device is a guest, click Explore on the toolbar and start exploring your device.
If your device has a partnership, synchronization starts. Please wait until synchronization is complete before using your device.
Click Finish to exit this wizard.
< Back
Finish
Cancel
Help

The partnership between the BHT and host computer has now been set up.
Refer to the ActiveSync 4.5 Help on the host computer for details on how to use ActiveSync.
Refer to the "BHT-700-CE API Reference Manual" or "BHT-700-CE Class Library Reference Manual" for details on how to debug user programs using ActiveSync.

Chapter 6
Maintenance

This chapter describes battery cartridge and daily procedures for taking care of the BHT and CU/CH.

6.1 Replacing the Battery Cartridge ····· 128
6.1.1 Battery Cartridge Service Life ····· 128
6.1.2 Battery Cartridge Replacement Method ····· 128
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6.1 Replacing the Battery Cartridge

6.1.1 Battery Cartridge Service Life

The battery cartridge is a consumable part and should be replaced after being charged approximately 300 times.

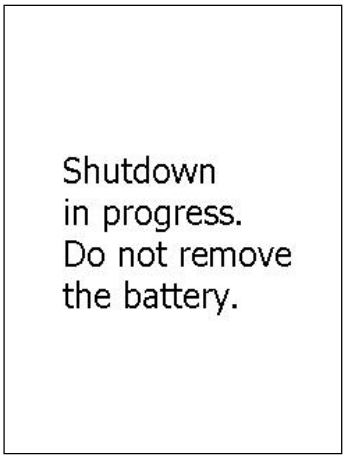
The performance of the battery cartridge's lithium-ion battery will deteriorate gradually with repeated charging, even during normal use. When the battery operation time becomes shorter even after charging for the specified length of time, replace the battery with a new one.

6.1.2 Battery Cartridge Replacement Method

* The battery cartridge shown in the drawing is the BT-700LL.

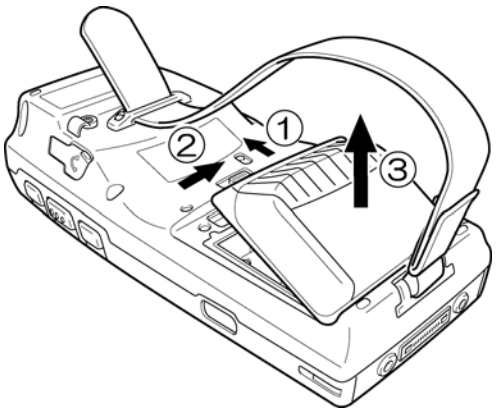
1. Press the **power** key to turn OFF the BHT power.

   The screen on the right displays.

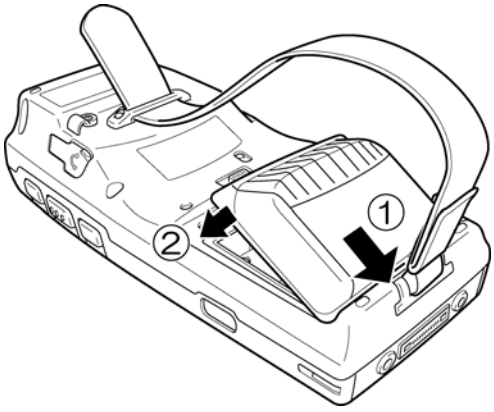


– **Point** –	Do not remove the battery cartridge until the power turns OFF and the screen display clears.

2. Disconnect the hand belt.
   Slide the battery cartridge cover release buttons (1)/(2) in the direction shown by the arrows and remove the battery cartridge (3).

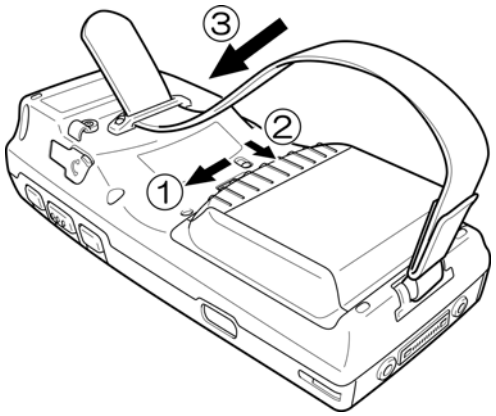


3. Insert the tabs on the cover for the new battery cartridge (1) into the BHT and load the cartridge in the direction shown by the arrow (2).
   (Refer to "Chapter 2 BHT Preparation" – "2.2 Loading and Charging the Battery Cartridge".)



– **Point** –	Insert the new battery cartridge within 3 minutes of removal to avoid data loss.

4. Slide the battery cartridge cover release buttons (1)/(2) in the direction shown by the arrows and return the hand belt (3) to its original position.



Battery Cartridge Recycling Request

- This product uses a lithium-ion battery that contains scarce, recyclable resources. We kindly ask for your cooperation in recycling to ensure reuse of these resources.

The crossed-out wheeled bin is applicable for EU member status only.

- Used battery cartridges must not be disposed of as combustibles.
- Contact your nearest rechargeable battery recycling centre or local sales office for information on disposal procedures.
- When disposing of used battery cartridges at your nearest recycle centre, cover the terminals with vinyl tape to insulate and protect from overheating or fire due to a short-circuit.
- Never disassemble battery cartridges.

⚠ WARNING	Mishandling may result in battery cartridge overheating, smoke generation, blowout or combustion. Please read the following items prior to use. ● Never charge the battery cartridge in the vicinity of fire or under a scorching sun. ● Always use a dedicated charger to charge the battery cartridge.

⚠ CAUTION	Mishandling may result in battery cartridge overheating, smoke generation, blowout or combustion. Please read the following item prior to use. ● Terminate charging if not completed even after the specified time has elapsed.

– Note –	● Replace the battery cartridge promptly. ● If the BHT is left for long periods of time with the battery cartridge removed, it may not be possible to back up the content of the memory, and data stored in the BHT may be lost. It is recommended that important data be either saved to the “FLASH” folder or uploaded to the host computer. ● Always turn the BHT power OFF before replacing the battery cartridge. Replace the depleted battery cartridge with a new one within three minutes to avoid data loss. Following replacement, turn ON the BHT power and check operation. ● The battery cartridge is charged using either a CU-733/714 communication unit (option) or CH-751/704 battery charger (option). Refer to “Chapter 9” for details of the charging method for the CU-733/714. Refer to the respective User’s Manual provided with each device for details of the charging method for the CH-751/CH-704. ● If a “Replace the battery!” or “Charge the battery!” message displays when impact is applied to the BHT, reboot the BHT and check the battery voltage level. The battery may not actually be depleted.

6.2 Replacing the Back-up Battery

If the following warning message displays, contact your dealer and replace the back-up battery.

Service life warning for...
OK
The service life of the backup battery will be expired soon.
To prevent data loss, immediately replace the backup battery with a new one.
For the replacement procedure, refer to the User's Manual.
Explorer
Desktop ...
Start

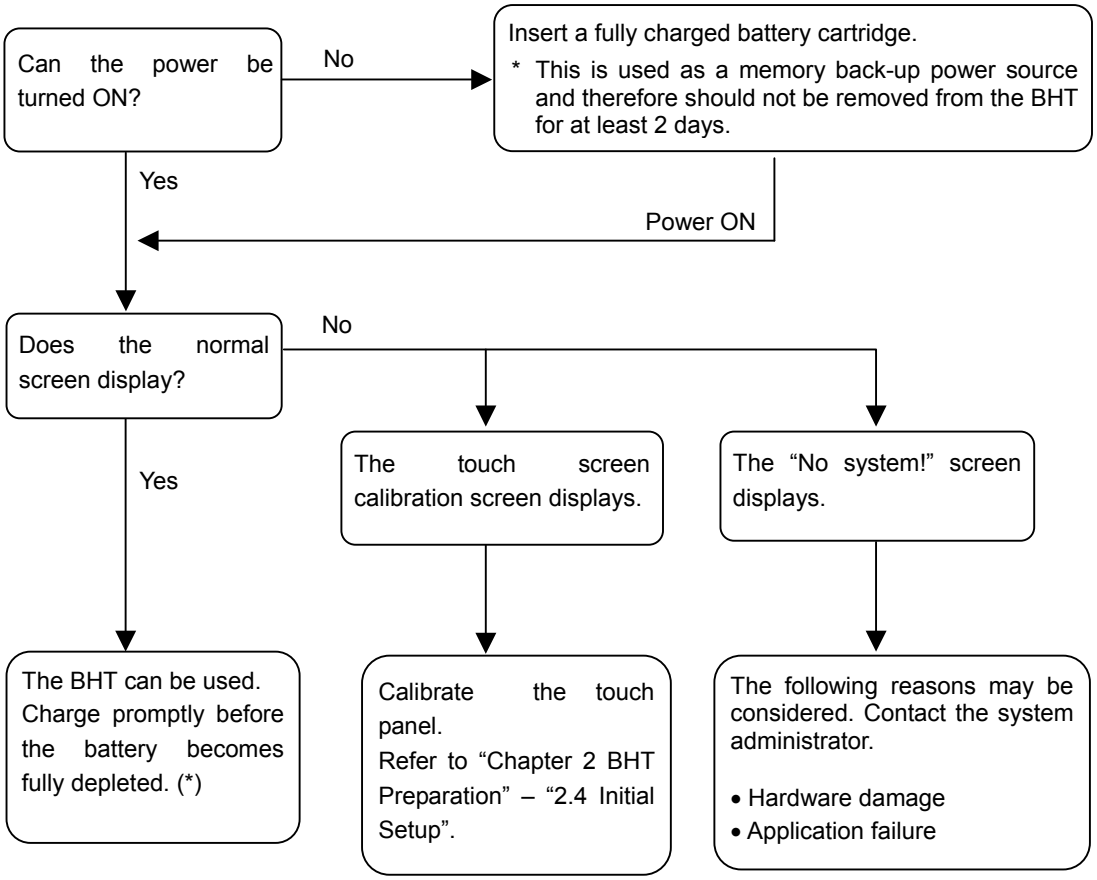
This warning message displays each time the power is turned ON after the back-up battery discharge count has reached 200 times or more.
Even if this warning message displays, operation can be resumed by tapping the **OK** button in the top right corner of the message window.

– Point –

- If the back-up battery is removed, it may not be possible to back up the content of the memory, and data stored in the BHT may be lost. It is recommended that important data be either saved to the "FLASH" folder or uploaded to the host computer.
- Each time the back-up battery is fully discharged, the discharge count automatically increases by one, however, replacing the back-up battery does not reset this value to zero automatically. As a result, it is necessary to reset the discharge count in accordance with the procedure described in "Chapter 4 System Operation" – "4.4.3 System Properties" – "[10] Resetting the Back-up Battery Discharge Count" when the back-up battery is replaced.
  Please note that the back-up battery discharge count is reset when the BHT is shipped from the factory.

6.3 Using the BHT after Long Periods

Data stored in the BHT may be lost and the calendar clock may stop if the BHT is left unused for long periods of time. Take appropriate measures in accordance with the procedure below.


Can the power be turned ON?
No
Insert a fully charged battery cartridge.
* This is used as a memory back-up power source and therefore should not be removed from the BHT for at least 2 days.
Yes
Power ON
Does the normal screen display?
No
Yes
The touch screen calibration screen displays.
The "No system!" screen displays.
The BHT can be used. Charge promptly before the battery becomes fully depleted. (*)
Calibrate the touch panel.
Refer to "Chapter 2 BHT Preparation" – "2.4 Initial Setup".
The following reasons may be considered. Contact the system administrator.
• Hardware damage
• Application failure

– **Point** – *: Files may become corrupt if left for a long period of time without replacing the battery cartridge.

6.4 Daily Maintenance

6.4.1 Proper Care of the BHT

Wipe any dirt from the BHT housing, charge terminals, and BHT or battery cartridge terminals with a dry, soft cloth.

Ensure to turn OFF the BHT before cleaning.

Notes in each part

BHT terminal, charger terminal dirt	Do not touch the BHT or the communication unit terminals by hand or stain them. Doing so could result in malfunction, a contact failure or prevent charging. Periodically clean the terminals of the BHT or the communication unit. And when they got dirty, wipe them away on each time. Wipe any dirt on the charge terminals with a dry, soft cloth (such as a lens cloth) or a cotton swab. But be careful not to damage the charge terminals when wiping them. Never use substances such as benzene, thinner and alcohol. Doing so can cause plating on the charge terminals to be marred.
Housing dirt	Wipe any dirt from the housing with a dry, soft cloth. If excessively dirty, wipe with a soft cloth that has been soaked in soapy water (always use neutral detergent) and wrung out thoroughly. Never use substances such as benzene or alcohol, as this may cause the housing to be marred or paint to peel off.
LCD screen dirt	Never rub or strike the LCD screen with anything hard, as this may result in scratches on the screen or breakage.
Keypad dirt	When cleaning the keypad, do not scrub the surface too hard or pull on the keys, as this may break the keys.
Barcode reading window dirt	Any dirt or dust adhering to the clear plate of the barcode reading window will adversely affect reading performance. When using in dusty areas, perform periodic inspections to check whether any dust has accumulated on the clear plate of the barcode reading window, and if so, first blow the dust away with an airbrush, and then gently wipe the plate with a cotton swab or similar soft object. If sand or hard particles have accumulated, rubbing the plate will result in scratches. Blow the particles away with an airbrush or wipe with a soft brush.

6.4.2 Proper Care of the CU/CH

Wipe any dirt from the housing or charge terminals with a dry, soft cloth.

In the interests of safety, unplug the AC adapter from the socket when cleaning the CU or CH.

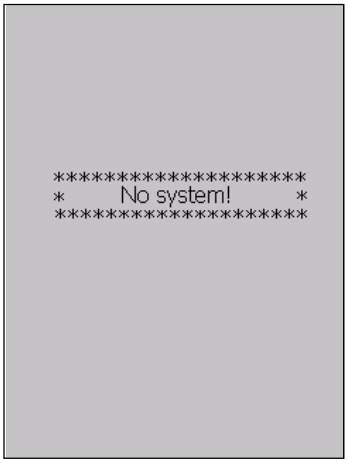
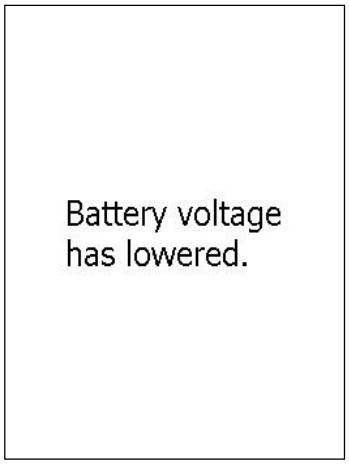
Chapter 7
Error Messages

This chapter describes causes and countermeasures for error messages that display during BHT use.

7.1 System Errors ····· 136

7.1 System Errors

The error messages that display on the screen and the causes and countermeasures to be taken if an error occurs when the power is turned ON or while running a program are shown below.

Message	BHT Response	Cause	Countermeasure
	The beeper sounds 5 times (each beep lasts for 0.1 seconds) and then the power turns OFF.	System program abnormality	Notify the system administrator.
	The BHT displays a warning for approximately 2 seconds while sounding the beeper 3 times (each beep lasts for 0.1 seconds) before returning to its normal operational status.	The battery voltage has dropped to a level that requires charging or battery cartridge replacement when turning the BHT ON, OFF or while running a program.	The battery cartridge will soon need charged. Replace or charge the battery cartridge.
	The beeper sounds 5 times (each beep lasts for 0.1 seconds) and then the power turns OFF. Depending on the battery consumption status, the beeper may not sound 5 times.	The battery voltage has dropped to a level that prevents BHT operation when turning the BHT ON, OFF or while running a program.	Replace or charge the battery cartridge.

Message	BHT Response	Cause	Countermeasure
	The screen on the left displays when the power is turned ON.	The back-up battery discharge count has exceeded the specified number of times and the battery power level has dropped below the stipulated level.	Replace the back-up battery. Refer to “Chapter 6 Maintenance” for details.

Chapter 8
Specifications

This chapter describes the BHT-700QWB-CE/700QWBG-CE specifications.

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8.1.1 Hardware Specifications ····· 140
8.1.2 Readable Code Specifications ····· 141
8.1.3 Interface Specifications ····· 145

8.1 Specifications

8.1.1 Hardware Specifications

27-Keypad

Power supply (main power):	Rechargeable lithium-ion battery cartridge (3.7 V DC)		
Dimensions (W) x (L) x (H):	83 x 162 x 40 mm		
Weight:	BHT-700QWB-CE:	Approx. 390 g (including battery cartridge BT-700LL)	
	BHT-700QWBG-CE:	Approx. 410 g (including battery cartridge BT-700LL)	
Ambient operating temperature:	-10° to 50° C		
Ambient operating humidity:	20 to 80% (with no dew condensation)		
Ambient operating brightness:	20 to 10,000 lx. (Depth of field: 110 mm, EAN-13: 0.33 magnification, PCS value: min. 0.9, Reflection intensity: min. 85% for white and max. 5% for black)		
Controller:	CPU:	32-bit RISC	
	RAM:	128MB	
	Flash memory:	128MB	
Keypad:	Trigger switches:	2	
	Magic keys (M1, M2, M3):	3	
	Tab key:	1	
	Numerical keys etc.:	27	
Display:	Type:	Dot-matrix, TFT liquid crystal display (LCD) touch screen with backlight	
	Formation:	240 dots wide by 320 dots high	
Calendar clock:	Year, month, day, hour, minute, and second		
	Year:	2 digits Auto leap year correction up until 2099	
Scan confirmation:	Indicator LED (red & blue), beeper, and vibrator		

42-Keypad

Power supply (main power):	Rechargeable lithium-ion battery cartridge (3.7 V DC)		
Dimensions (W) x (L) x (H):	83 x 162 x 40 mm		
Weight:	Approx. 410 g (including battery cartridge BT-700LL)		
Ambient operating temperature:	-10° to 50° C		
Ambient operating humidity:	20 to 80% (with no dew condensation)		
Ambient operating brightness:	20 to 10,000 lx. (Depth of field: 110 mm, QR code: Ver.5 (37 x 37 cells), Error correction level: M, Cell pitch: 0.5mm, PCS value: 0.9 min., Reflection intensity: 85% min. for white and 5% max. for black) 500 to 3000 lx. (Depth of field: 110 mm, QR code: Ver.5 (37 x 37 cells), Error correction level: M, Cell pitch: 0.25mm, PCS value: 0.9 min., Reflection intensity: 85% min. for white and 5% max. for black)		
Controller:	CPU:	32-bit RISC	
	RAM:	128MB	
	Flash memory:	128MB	
Keypad:	Trigger switches:	2	
	Magic keys (M1, M2, M3):	3	
	Tab key:	1	
	Numerical keys etc.:	42	
Display:	Type:	Dot-matrix, TFT liquid crystal display (LCD) touch screen with backlight	
	Formation:	240 dots wide by 320 dots high	
Calendar clock:	Year, month, day, hour, minute, and second		
	Year:	2 digits Auto leap year correction up until 2099	
Scan confirmation:	Indicator LED (red & blue), beeper, and vibrator		

(Note) Some of the pixels on the LCD touch screen may not illuminate or stay permanently illuminated. Furthermore, there may also be inconsistencies in color and brightness. None of these aspects represent an LCD defect.

8.1.2 Readable Code Specifications

QR Codes (Model 1 and Model 2) and Micro QR Code

Code size	Cell pitch
QR code	
21 x 21 cells to 113 x 113 cells (Skew angle: 360°)	0.25 mm
21 x 21 cells to 85 x 85 cells (Skew angle: 360°) 125 x 125 cells	0.33 mm
Micro QR code	
11 x 11 cells to 17 x 17 cells	0.25 mm

PDF417 and MicroPDF417

Number of columns and number of rows	Module size
PDF417	
1 to 9 digits, 3 to 43 rows *1	0.25 mm
MicroPDF417	
1 to 4 digits, 4 to 44 rows *2	0.25 mm

*1 Excluding start/stop codes and left and right indicators

*2 Excluding left, center, and right row address patterns

MaxiCode

Module size	Module size
30 (29) x 33 modules	0.88 mm

Data Matrix

Code size	Module size
Max. 96 x 96 cells (Skew angle: 360°)	0.25 mm
Max. 88 x 88 cells (Skew angle: 360°) 120 x 120 cells	0.33 mm

EAN.UCC Composite

Code size	Module size
Within the sizes limited by RSS, EAN128, UPC/EAN, PDF417, and MicroPDF417 symbologies	0.25 mm

Barcodes

Barcode Type	Bar Dimensions	Scan Magnification
Universal product codes EAN-13 EAN-8 UPC-A UPC-E EAN-13 with add-on EAN-8 with add-on UPC-A with add-on UPC-E with add-on 2-dgit add-on 5-dgit add-on	Min. 0.26 mm	Min. 0.8
Interleaved 2of5 (ITF) Standard 2of5 (STF) Codabar (NW-7) Code 39	Min. 0.125 mm PCS value ≥ 0.9 Black/white bar reflection intensity difference ≥ 0.8 Min. 0.15 mm (PCS value ≥ 0.45)	
Code 93 Code 128 (EAN-128)	Min. 0.15 mm (PCS value ≥ 0.45)	
MSI	Min. 0.20 mm (PCS value ≥ 0.45)	
GS1 DataBar™ (RSS) GS1 DataBar Omnidirectional GS1 DataBar Truncated GS1 DataBar Stacked GS1 DataBar Stacked Omnidirectional GS1 DataBar Limited GS1 DataBar Expanded GS1 DataBar Expanded Stacked	Min. 0.15 mm (PCS value ≥ 0.9) Black/white bar reflection intensity difference ≥ 0.8	

All of the above values are under the following conditions:
- Ambient illuminance: 500 to 3000 lx.
- Light source : Xenon lamp

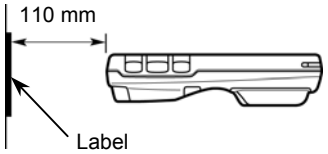
Multi-line Codes Scanning

The BHT-700QWB-CE/700QWBG-CE supports multi-line codes scanning that scan up to 3 lines of codes out of universal product codes, Interleaved 2of5 (ITF), Codabar (NW-7), Code 39, and Code128 (EAN-128) at a time in the specified order.
The multi-line codes scanning may be specified in user programs only. For details, refer to the "BHT-700 API Reference Manual."

Required Optical Properties

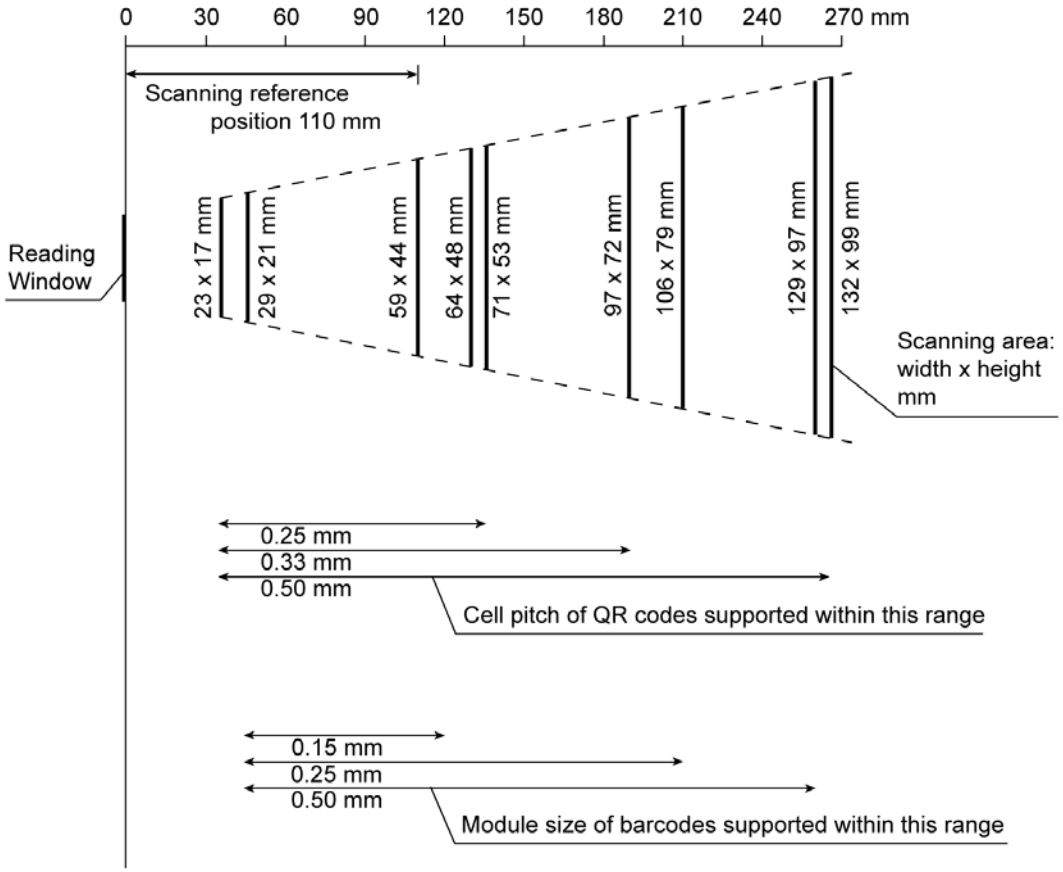
White bars: Reflection intensity of 45% or higher
Black bars: Reflection intensity of 25% or lower
PCS value of 0.45 or higher

Scanning Reference Position



As illustrated at left, align the reading window with the center of the label (code) to be scanned.

Scanning Distance and Area



QR codes	Cell pitch	Scanning distance
	0.25 mm	35 to 135 mm *1
	0.33 mm	35 to 190 mm *1
	0.50 mm	35 to 265 mm *2

PCS value: 0.9 min., Reflection intensity: 85% min. for white

*1 Under the following conditions:
- Ambient illuminance: 500 lx. (Xenon arc lamp)
- QR code Model 2, Ver. 5 (37 x 37 cells)
  Error correction level: M, Black and white label

*2 Under the following conditions:
- Ambient illuminance: 500 lx. (Xenon arc lamp)
- QR code Model 2, Ver. 3 (29 x 29 cells)
  Error correction level: M, Black and white label

Barcodes	Module size	Scanning distance
	0.15 mm	45 to 120 mm *3
	0.25 mm	45 to 210 mm *4
	0.33 mm	45 to 260 mm *5

PCS value: 0.9 min., Reflection intensity: 85% min. for white

*3 Under the following conditions:
- Ambient illuminance: 500 lx. (Xenon arc lamp)
- Codaber, 10-digit
  Narrow bar, Narrow space: 0.15 mm

*4 Under the following conditions:
- Ambient illuminance: 500 lx. (Xenon arc lamp)
- Codaber, 10-digit
  Narrow bar, Narrow space: 0.25 mm

*5 Under the following conditions:
- Ambient illuminance: 500 lx. (Xenon arc lamp)
- EAN-8, Module size: 0.33 mm

The BHT-700QWB-CE/700QWBG-CE may fail to read codes due to specular reflection depending upon the position of the light source, scanning angle of the reading window, and other conditions.

8.1.3 Interface Specifications

IrDA Interface

Synchronization:	Start-stop
Input signals:	RD
Output signals:	SD
Transmission speed:	Max. 115,200 bps

Connector Interface

Communication method:	USB1.1, Full-speed compliant, RS-232C interface

Bluetooth® Interface

Specification:	Bluetooth® Standard Ver. 2.0 conformity
RF output:	Class 2 (2.5mW max.)
Supported profiles:	- DUN-DT Profile - Generic Access Profile - Serial-DevA Profile - Serial-DevB Profile - Service Discovery Profile
Bluetooth® ID:	B02257, B03381

Wireless Interface

Specification:	IEEE 802.11a/b/g
Radio type:	OFDM, DS-SS
Frequency bands:	5.15GHz – 5.825GHz, 2.412GHz – 2.484GHz
Data rate:	54/48/36/24/18/12/9/6/11/5.5/2/1Mbps (The data rate is automatically controlled.)
Modulation type:	64-QAM/16-QAM/CCK/QPSK/BPSK (The modulation is automatically controlled.)

GPRS and EDGE Interface (BHT-700QWBG-CE only)

Frequency bands:	850/900/1800/1900MHz	
Multislot class:	GPRS:	Class12
	EDGE:	Class12
Coding schemes:	GPRS:	CS1-CS4
	EDGE:	MCS1-MCS9

Chapter 9
Appendices

This chapter describes the CU-700 Series (option), and provides details of the MicroSD card (option) and SIM card (option) insertion procedure.

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9.1 CU-700 Functions

The CU-700 Series communication unit is available in two models: the CU-733 and CU-714.
The CU-700 Series is equipped with the following functions

1) Data exchange function

The CU-733/714 exchanges data and programs between the BHT and host computer.

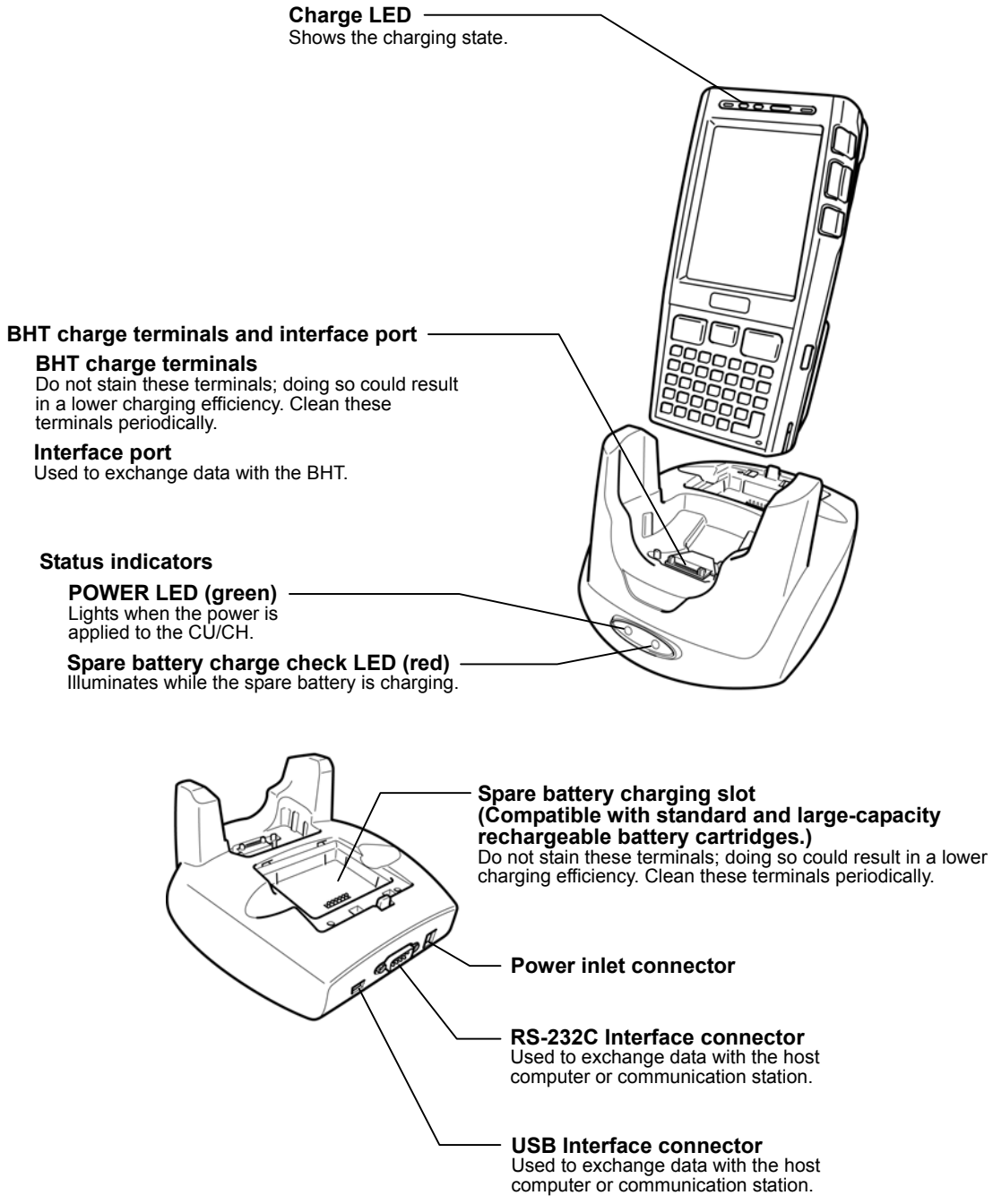
Interface with BHT:	Connector interface
Interface with host computer:	RS-232C or USB (CU-733) Ethernet (CU-714)

2) Battery cartridge charging function

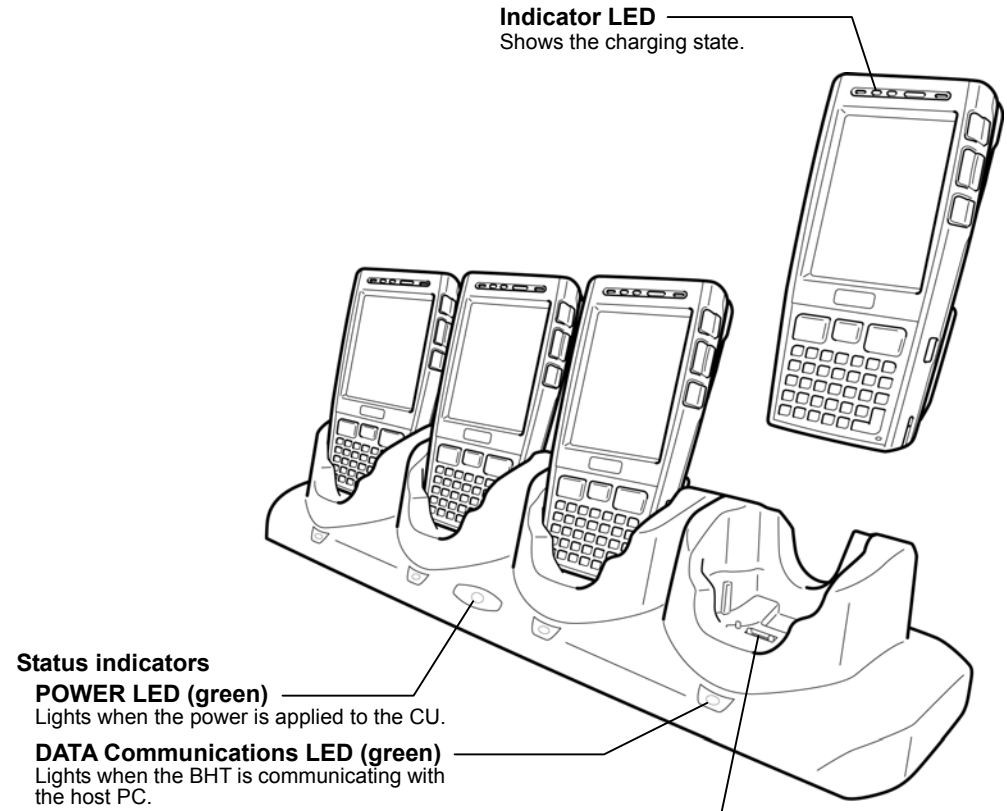
The battery cartridge is charged while loaded in the BHT.

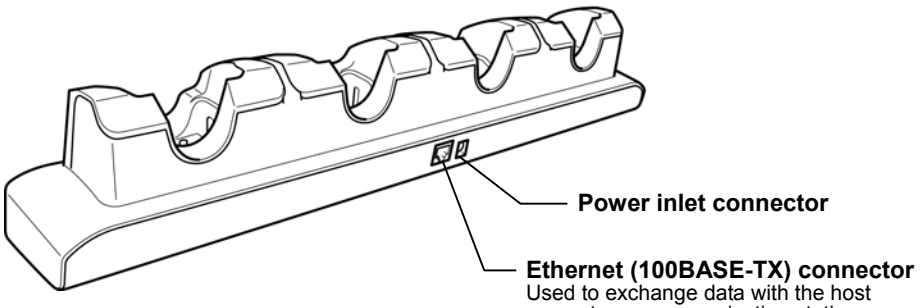
9.2 Components and Functions

CU-733


Charge LED
Shows the charging state.
BHT charge terminals and interface port
BHT charge terminals
Do not stain these terminals; doing so could result in a lower charging efficiency. Clean these terminals periodically.
Interface port
Used to exchange data with the BHT.
Status indicators
POWER LED (green)
Lights when the power is applied to the CU/CH.
Spare battery charge check LED (red)
Illuminates while the spare battery is charging.
Spare battery charging slot
(Compatible with standard and large-capacity rechargeable battery cartridges.)
Do not stain these terminals; doing so could result in a lower charging efficiency. Clean these terminals periodically.
Power inlet connector
RS-232C Interface connector
Used to exchange data with the host computer or communication station.
USB Interface connector
Used to exchange data with the host computer or communication station.

CU-714

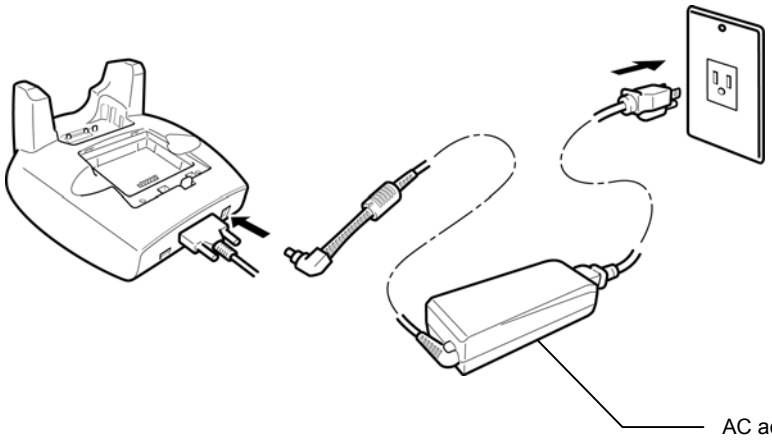

Indicator LED
Shows the charging state.
Status indicators
POWER LED (green)
Lights when the power is applied to the CU.
DATA Communications LED (green)
Lights when the BHT is communicating with the host PC.
BHT charge terminals and interface port
BHT charge terminals
Do not stain these terminals; doing so could result in a lower charging efficiency.
Clean these terminals periodically.
Interface port
Used to exchange data with the BHT.


Power inlet connector
Ethernet (100BASE-TX) connector
Used to exchange data with the host computer or communication station.

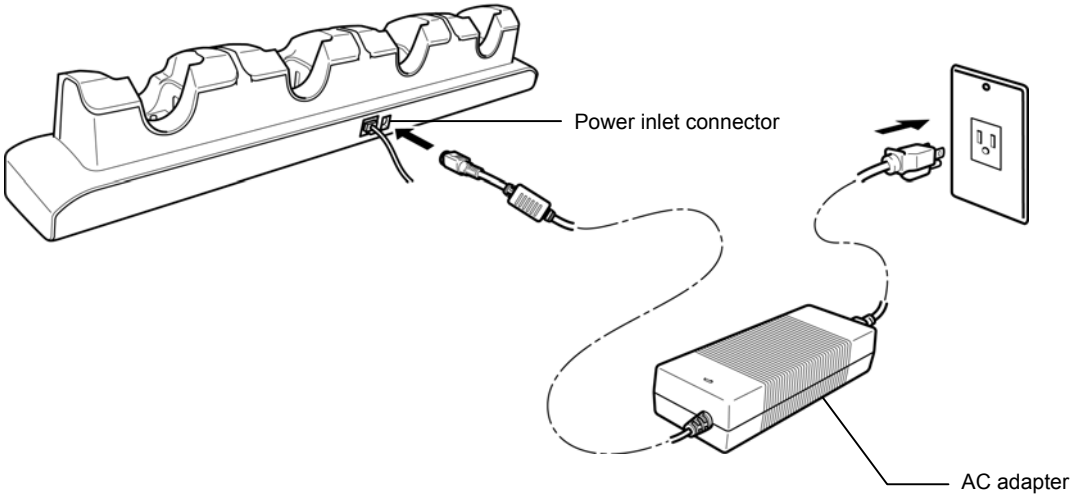
9.3 CU-700 Power Supply

Power for the CU is supplied from a wall socket via the dedicated AC adapter.
Connect the outlet plug of the AC adapter to the power inlet connector of the CU, and then plug the other end into the wall socket.

CU-733



CU-714



⚠ WARNING

Mishandling of the CU may result in electric shock, overheating or smoke generation. Please read the following items prior to use.

- Never disassemble or modify the CU.
- Never place the CU in a microwave oven or high-pressure container.
- Never use the CU if smoke, abnormal noises or odors are being emitted.
- If any of the above abnormalities occur, immediately unplug the AC adapter.
- If foreign material or water gets into the CU, immediately unplug the AC adapter from the wall socket or CU.
- If the CU housing is damaged after being dropped, immediately unplug the AC adapter from the wall socket or CU.
- Never use the CU to charge a battery other than the stipulated battery cartridge.
- Never connect the output terminals with metal objects and so on.
- Use the dedicated AC adapter only.
- Never use the CU on the line voltage other than that specified.
- Never use the AC adapter if the power cord is damaged (e.g., exposed or broken lead wires).

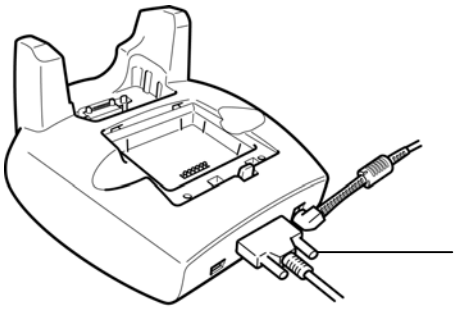
9.4 Communicating with the Host Computer

9.4.1 Interface Cable Connection

1. Unplug the CU-733/714 AC adapter from the wall socket.

2. Turn OFF the power to the host computer.

3. CU-733: Connect the RS-232C or USB interface cable to the CU-733 interface port.
   CU-714: Connect the Ethernet interface cable to the CU-714 interface port.



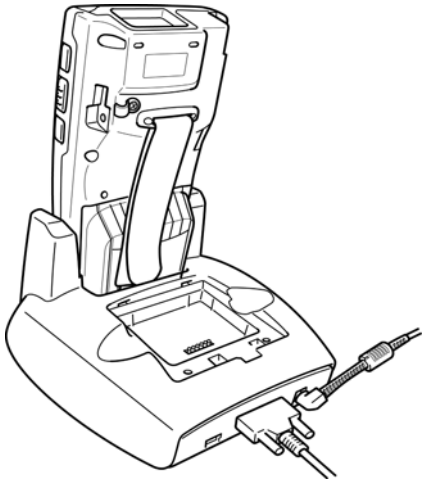
Interface cable
CU-733: RS-232C or USB
CU-714: Ethernet

4. CU-733: Connect the other end of the RS-232C/USB interface cable to the corresponding port at the host computer.
   The USB interface cable can also be connected to the host computer via a USB hub.
   CU-714: Connect the other end of the Ethernet interface cable to the corresponding port at the Ethernet hub.

9.4.2 Communication with the Host Computer

This section describes how to communicate with the host computer from the System Menu. The same method applies when communicating using user programs.

1. Turn ON the host computer to run Windows.
2. Plug the AC adapter into the wall socket.
3. Ensure that the BHT power is turned OFF and place it on the CU.



4. At the host computer, start up a communication program capable of using Ymodem.
5. Turn ON the BHT, open the System Menu, and select [2:Communication] - [1:Ymodem] to start “SerialTransfer”.

   Select “Serial (COM1:)” for the communication port.

6. Tap "Upload” to transfer data stored in the BHT to the host computer. Tap “Download” to transfer data from the host computer to the BHT.

   (Refer to “Chapter 4 System Operation” – “4.4.2 Communication Menu” for further details.)

The DATA Communications LED on the CU-714 will start flashing when communication begins.
Communication will be complete when the DATA Communications LED turns OFF.
(The CU-733 has no DATA Communications LED.)

9.5 Charging the BHT

9.5.1 Charging the BHT

The battery cartridge is charged while loaded in the BHT.

⚠ CAUTION • Charge batteries in temperature from 0°C to 40°C (32°F to 104°F).

– Note – Perform charging after turning OFF the BHT.

– Note – Battery Cartridge Service Life

The capacity of the lithium-ion battery used in the battery cartridge will gradually deteriorate during the repeated cycles of charging and discharging, even under normal use. Replace the battery cartridge with a new one if the power consumption period becomes shorter even after charging for the specified length of time. Generally, battery cartridge replacement is required after approximately 300 cycles of charging and discharging.

1. Turn ON the CU power.

The POWER LED illuminates in green.

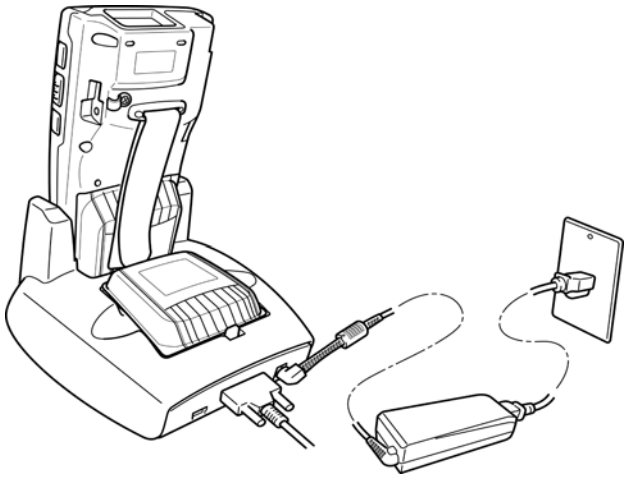
2. Turn OFF the BHT power before placing on the CU.

The BHT charge LED illuminates in red and charging is commenced.

Charging Time

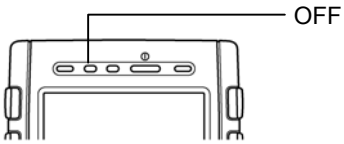
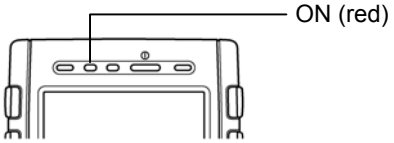
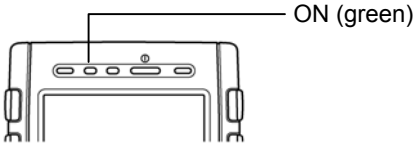
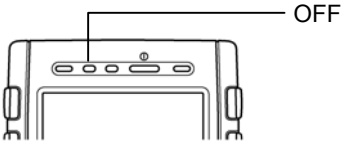
Rechargeable battery cartridge type	Charging Time
Standard rechargeable battery cartridge	Approx. 3 hours
Large-capacity rechargeable battery cartridge	Approx. 6 hours

The charge LED turns green when charging is complete.



3. Remove the BHT from the CU.

9.5.2 Charging Operation and LED Indicators

Operator Action	CU Status	BHT Charge LED
	Standby ⇓	
Place the BHT on the CU. ⇓	Charging ⇓	
Standard rechargeable battery cartridge After approx. 3 hours Large-capacity rechargeable battery cartridge After approx. 6 hours ⇓	Charging complete ⇓	
Remove the BHT.	Standby	

9.6 CU-700 Specifications

9.6.1 Hardware Specifications

	CU-733	CU-714
Power supply:	100/240 V AC, 50/60Hz (12 V DC: Using dedicated AC adapter)	
Max. power consumption:	12 V DC, 1800mA	12 V DC, 6000mA
Dimensions (W) x (L) x (H):	127 x 168 x 91 mm	526 x 120 x 93 mm
Weight:	Approx. 290 g	Approx. 1240 g
Ambient operating temperature:	0 to 40° C	
Ambient operating humidity:	20 to 80% (with no dew condensation)	

9.6.2 Charging Requirements

CU-733

Charge current: Approx. 1150mA
Charge time: Approx. 3 hours (Standard rechargeable battery cartridge)
Charge time: Approx. 6 hours (Large-capacity rechargeable battery cartridge)

CU-714

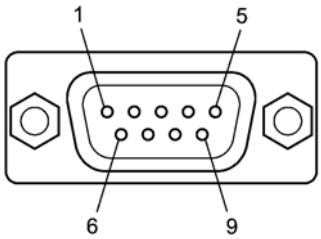
Charge current: Approx. 1150mA
Charge time: Approx. 3 hours (Standard rechargeable battery cartridge)
Charge time: Approx. 6 hours (Large-capacity rechargeable battery cartridge)

9.6.3 Interface Specifications

CU-733

RS-232C

The CU-733 RS-232C interface connector uses Dsub-9P.



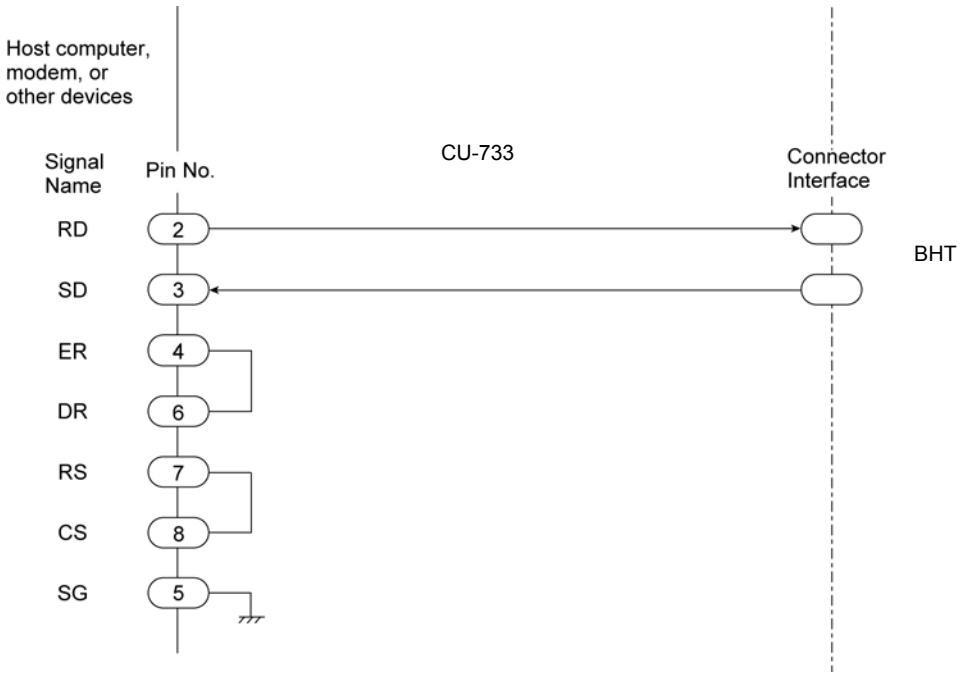
CU-733 RS-232C interface port (Dsub-9P)

Pin. No.	Signal Name	Function	Signal Direction CU-733 ↔ External Device
2	RD	Receipt data	←
3	SD	Transmission data	→
4	ER	Data terminal ready	→
5	SG	Signal ground	—
6	DR	Data set ready	—
7	RS	Transmission request	—
8	CS	Transmission ready	—

The input/output level for the signal voltage is shown in the table below.

Signal	Input Voltage	Output Voltage
0	3 V ≤ n ≤ 15 V	5 V or higher
1	-15 V ≤ n ≤ -3 V	-5 V or lower

The CU-733 internal wiring is shown below.

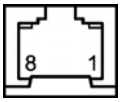


USB

The USB interface on the CU-733 is USB1.1 (Full-speed) compliant, with a Type Mini-B receptacle.

CU-714

The CU-714 has an IEEE802.3-compliant Ethernet interface port (100Base-TX).



Ethernet Interface Port (RJ45 jack) on the CU-714

Pin No.	Signal	Functions
1	TD+	Send data
2	TD-	Send data
3	RD+	Receive data
4	N.C.	No connection
5	N.C.	No connection
6	RD-	Receive data
7	N.C.	No connection
8	N.C.	No connection

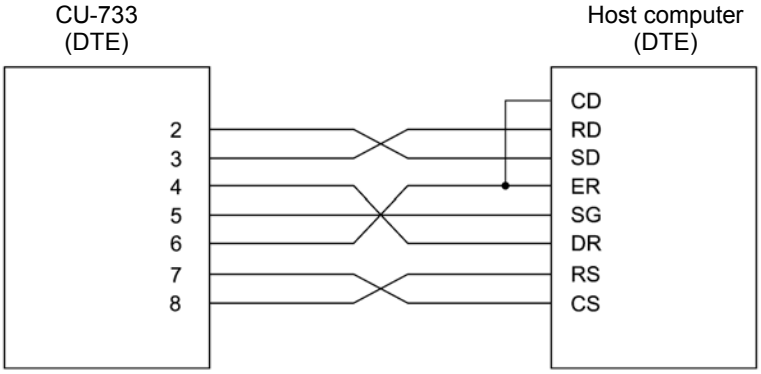
The MAC address of the CU-714 is printed on the nameplate.

9.6.4 Interface Cable Connection

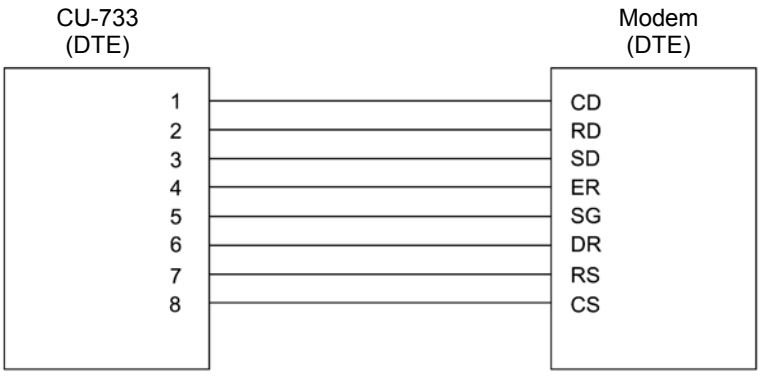
CU-733

RS-232C

As shown in the diagram below, connect the CU-733 to the host computer with a cross-mode cable, and to the modem with a straight-mode cable.



Cable connection between CU-733 and host computer



Cable connection between CU-733 and modem

DTE and DCE

With RS-232C specification, DTEs (Data Terminal Endpoint) are generally connected by a cross-mode cable, and the DTE and DCE (Data Circuit Endpoint) are connected by a straight-mode cable.
The DTE is a device connected at both ends of a communication line as a sender or receiver of data. This refers to devices such as the BHT placed on the CU-733 and the host computer.
The DCE is a device connected between the DTE and communication line and terminates communication lines. The DCE converts the respective signals without any change in content. This applies to devices such as a modem or TA.

USB

Use an interface cable that conforms to USB specifications.

CU-714

Use a TIA/EIA Category 5 cable or higher one.

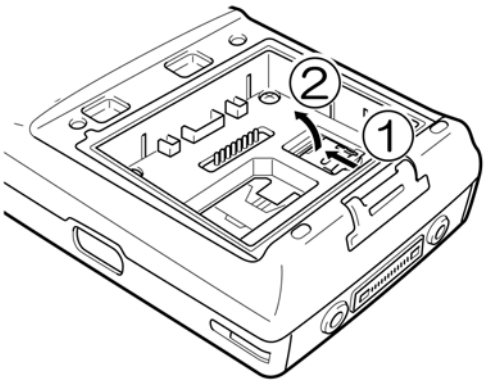
9.7 Inserting the MicroSD Card

Insert the MicroSD card (option) into the BHT using the following procedure.

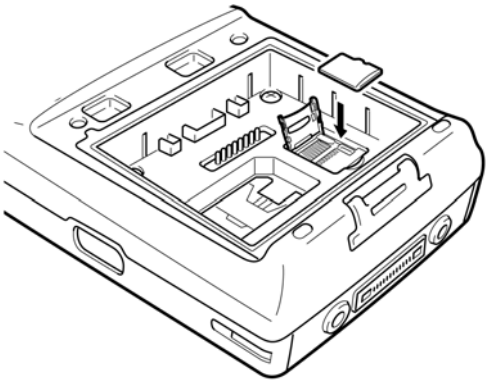
– **Caution** – Always turn the BHT power OFF before removing the MicroSD card. Failure to observe this may result in the loss of data stored in the card.

1. Remove the battery cartridge.

2. Slide the MicroSD card cover in the (1) OPEN direction and then open the (2) MicroSD card cover.

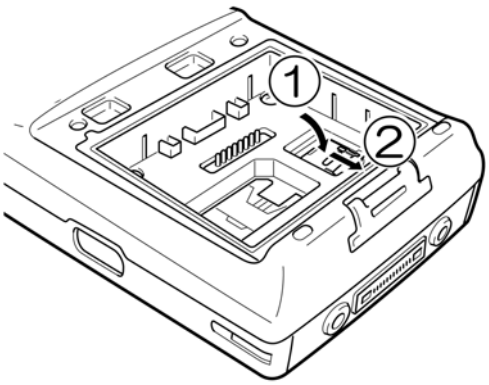


3. Align the MicroSD card with the slot so that the terminals are facing downward and insert the card.



4. Close the (1) MicroSD card cover and then slide the (2) MicroSD card cover in the CLOSE direction.

5. Load the battery cartridge.

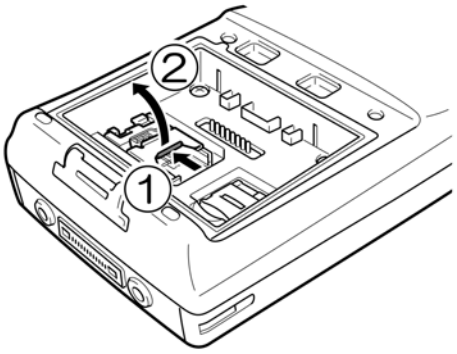


9.8 Inserting the SIM Card

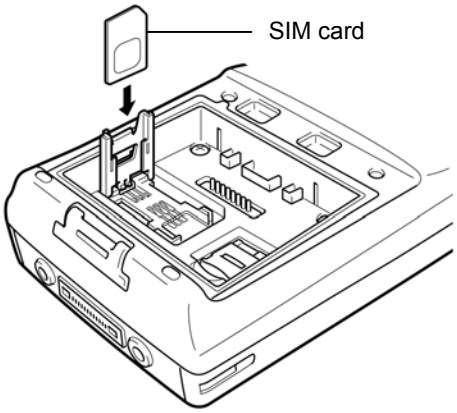
Insert the SIM card (option) into the BHT using the following procedure.

1. Remove the battery cartridge.

2. Slide the SIM card cover in the (1) OPEN direction and then open the (2) SIM card cover.

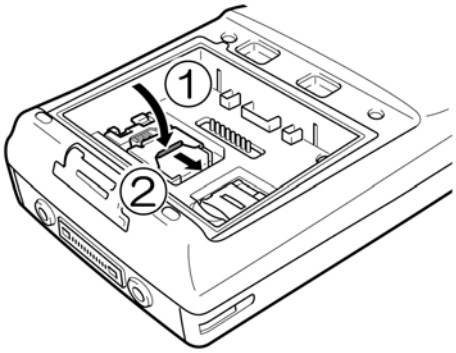


3. Insert the SIM card into the slot beside the SIM cover.



– Point – Ensure that the SIM card is inserted in a direction that matches the shape of the SIM slot.

4. Close the (1) SIM card cover and then slide the (2) SIM card cover in the CLOSE direction.



5. Load the battery cartridge.

2D code Handy Terminal

BHT-700QWB-CE
BHT-700QWBG-CE

User's Manual

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DENSO WAVE INCORPORATED